

IT IS 2032. WHERE IN THE WORLD IS OKLAHOMA?



*Never doubt that a small group of thoughtful, committed citizens
can change the world. Indeed, it's the only thing that ever has.*

Margaret Mead

An Oklahoma Academy Town Hall
October 14-17, 2012
National Center for Employee Development, Norman

The Oklahoma Academy is a statewide nonprofit, nonpartisan, membership organization founded by Governor Henry Bellmon in 1967, and revitalized by him in 1985, to bring public attention to policy issues, provide objective, thorough research and act as a catalyst for positive change.

The Mission of the Oklahoma Academy is to identify issues facing Oklahoma, provide well-researched, objective information, foster nonpartisan collaboration, develop responsible recommendations, and encourage community and legislative action.

The Vision of the Oklahoma Academy is to empower Oklahomans to improve their quality of life through effective public policy development and implementation.

The Academy Process identifies areas of need and problems facing Oklahoma, conducts research on identified critical issues, and develops long range goals, consensus recommendations, and agendas for action. Through the Town Hall conference process, forums and summits, the Academy increases citizen awareness, encourages civic engagement and sets the stage for thoughtfully improving Oklahoma.



Moving Ideas Into Action

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Foreword

It is 2032. Where in the world is Oklahoma?

Of course we don't know right now - but we bet it will be at a place described by the effective collaboration of our private sector (business) and public sector (government) and academia (education) - or the lack thereof. This can be called The Power of Three as it describes modern economic interactions depicted in the graphic on this page. The Town Hall will ponder which gear represents which sector - and what the proper relative sizes and relationships of the gears should be.



THE POWER OF THREE

Today as never before, our great civic debate is over the primacy of the public or private economies and how academia can/should best complement both. That will be a fundamental North Star principle guiding the discussion and findings of our Town Hall.

Our Town Hall Introduction provides an overview and in Section 1 we hear from prominent Academy members about important fundamentals for global economic success. Section 2 we provides data and information to spice the discussions. In Sections 3 and 4 we discuss Behaving and Trading Globally. Finally Sections 5, 6 and 7 flesh out the “three gears” by focusing on our Private Sector (business), Public Sector (government) and Academia (education), respectively.

Volume One

October 14-17, 2012, Norman

An Oklahoma Academy Town Hall About The Future

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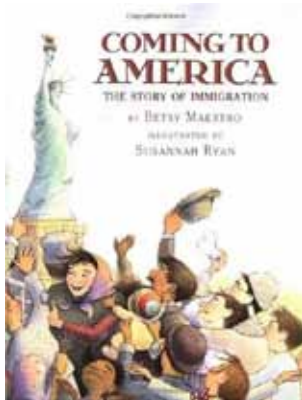
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An apple a day ... ?

Welcome from Susan and Julie



*Julie Knutson
President and CEO*



*Susan Winchester
Chairman*

*"Do I have to be familiar with what is in these books?" Yes
"Is this a textbook, reference book, briefing papers or what?" Yes
"Are these books really useful and necessary for our Town Hall?" Yes*

There probably are other questions you will have, but for now know that these pages contain good information that will provide a baseline for understanding, information, and ideas from others. Reading the books should spur further thinking by you and will prepare you for the discussions, deliberations and collaborative development of ideas and recommendations for Oklahoma's future.

Be prepared and ready to go!

The Oklahoma Power of Three

Brian A. Crain, State Senator, Tulsa

Meet Brian Crain

If re-elected in November, Senator Crain will serve his final term as a term-limited State Senator (Tulsa). He is also nearing the completion of requirements for a Master's degree in Public Administration at the University of Oklahoma. Brian is a graduate of the University of Oklahoma and the College of Law at University of Tulsa. He crafted this article as a reflection of his State Senate service - and through the lens of a graduate student studying public policy.



Introduction

Three is a special number. It describes many relationships in the history of man. For example there are three major divisions in comparative religion: Abrahamic, Indian (Dharmic) and East Asian (Taoic). Within the Abrahamic religions are three subgroups of Christianity, Judaism and Islam. On a more secular and contemporary note, we grapple with the Power of Three (business, education and government) in every session of our Oklahoma State Legislature.

A tension exists between the goals of education, the goals of business and the legitimate ends of government. This tension is seen in many ways, but perhaps the clearest is the regular cry of more government involvement by education advocates, business demands less government interference and efforts by elected leaders to satisfy the expectations of this and numerous other groups while trying to improve our state for now and the next generation.

Education

Supporters call for increase funding. Every year, legislators are told that education has not been given “enough money”. No supporter can give a dollar amount as to how much is “enough money”. Those responsible for the budget often feel they face demands that can never be satisfied.

Business

In contrast, the business community seeks less interference and involvement by the government. This takes the form of lower taxes, more and greater tax credits and release from regulations that provide little protection for Oklahomans but have a significant expense to the private sector. These demands translate to less revenue for the state resulting in smaller budgets for education, public safety, health and human services, transportation and many other needy requirements.

Editors Preface

There are 73 articles in this book. A major editorial decision is to select one to be the first presented - and to set our tone. We chose this contribution by Senator Crain.

There are many analogies for the Power of Three. An apt one is a computer. The three major components are firmware (chips), hardware, and software. We can easily equate each with private sector, public sector and academia. The computer works only as well as how the three elements complement and reinforce each other.

An open question relates to the primacy of one versus the other two. In Oklahoma, that issue seems settled - the private sector is primary. But the balance is always a key issue. Nationally, a battle is brewing between the public and private economies, perhaps to be temporarily resolved in November. See the Henninger article in Section 6.

One macro question is “what kind of world will there be in 2032 and what will Oklahoma's place be in it?” Where it is and who benefits will be items for our Town Hall process to ponder. A companion question is how best should Oklahoma “business, government and academia” cooperate and collaborate to get us there.



“I wish that education and business could approach the legislature **TOGETHER** and jointly present a thoughtful and mutually beneficial plan where all of us can go in the same direction. It hasn’t happened yet. I hope it may some day” Sen. Brian Crain



THE POWER OF THREE

Government

Our government recognizes that these two groups, along with many others, have legitimate demands and expectations. However, as in most areas of life, Oklahoma’s government must meet too many demands with too few dollars. Our elected officials face the situation in the same manner as their predecessors have done for the past hundred years; the essential services receive partial funding but less than enough to meet all their requirements.

A New Angle

Perhaps its time to address this process from a new angle. Instead of education advocates and the business community competing against one another, what would happen if business and education worked together in approaching government. How would this current dynamic change if these two groups presented a united front to the Governor, Legislature and all other groups who made demands upon government.

Education and business goals share much in common. Both worry as much about the future as they do the present. Both seek an educated and skilled workforce. Both recognize that a healthy business environment provides a stable and balanced tax base. Not surprisingly, these education and business goals are also held by government. Any differences between these two arises out of how to achieve common goals; not the common goals themselves.

Government decides the balance all the various functions it supports. This decision making comes after discussion, debate, cussing and prayer about

the merits of each need. However, this process contains many failures, both small and large, because the good men and women involved are only human. Therefore, it would be of benefit to education and business to reach a common accord as to their expectations of government and work together to see these expectations are met.

Government needs to do only a few things but should be strong enough to do them well. With the education and business communities working together, government will surely join in the effort. Government can provide the political environment of friendly regulation, a tax structure which encourages private investment and an infrastructure that includes both roads but communication.

Education can provide the variety of methods necessary to insure that our workforce is as educated and skilled as possible to be contributing members of our society. Education can instill a life-long love of learning that will keep our workforce current in their skills and education. In short, education provides the key to a healthy, happy population which contributes and improves our statewide community.

Business provides the means for people to provide for themselves along with their families, communities and State. By offering the necessary entrepreneurial spirit in a supportive political climate, business can offer that educated workforce employment and careers. In short, a better balance will be achieved by working together than by achieving success at the expense of the other.



The Next American Boom

Michael S. Malone, San Jose, CA

The Sources of the Next American Boom: Nanotech, 3-D printing and other innovations point to a coming golden era, if we can unleash the animal spirits of the market. Wall Street Journal, July 5, 2012. Mr. Malone is a tech journalist and the author of several books, most recently "Charlie's Place" (History Publishing, 2012). In August 2008, Malone led a group of twenty Boy Scouts and troop leaders from the San Jose, California area on a 56-mile trek on horseback from Fort Reno, Oklahoma to Enid, Oklahoma.

Three years after the recession was declared officially over, unemployment remains high and there's worry that a new recession is down the road. And yet waiting in the wings for when we get our economic policies in order are a mounting number of stunning discoveries, inventions and technological breakthroughs that could set off a burst of growth and wealth creation as big as any in living memory.

The fracking technology that is making available vast new sources of recoverable oil and natural gas in North America is one such breakthrough. But all across the commercial and industrial landscape, there are exciting developments:

Nanoculture: One of the truths of tech is that revolutions take longer than predicted, but they arrive sooner than we are prepared for them. That is the case with nanotechnology, the hot new science story of a decade ago.

Though it has largely disappeared from the front pages, nanotech is only now coming into its own. Breakthrough medicines; genetic research; new materials such as graphene (a lattice-sheet form of carbon used for everything from filters to computer chips); molecular electronics (extreme miniaturization, thus super-small sensors and other devices); and quantum computing (small, superfast

supercomputers) have all been announced in recent months. Indeed, the range of emerging applications for nano materials is so wide-ranging and important that, together, they suggest an impending turning point in high tech as important as silicon and integrated circuitry were half a century ago.

Cloud Crowd: In the world of information technology, the big story these days is the shift of data management from largely in-house computing centers to rented, easily scalable computing and storage from anonymous servers located somewhere out in the Internet. Much of this shift, driven by leading providers such as Amazon,

is already well under way, rapidly driving down costs and making information management much more affordable both for industry and, increasingly, consumers.

This in turn has kicked off a true revolution in what is being called "big data." Big data is the application of all of

this new computing power to reach beyond the individual application of mass information to the mass application of individual data—for instance, by tracking a billion sensors in real time to monitor weather across a continent. It could mean capturing every step in the path of every shopper in a store over the course of a year, or monitoring every vital sign of a patient every second for the course of his illness.

Big data offers measuring precision in science, business, medicine and almost every other sector never before possible. It could ultimately have an impact as great as mass production did more than a century ago—creating a new world of mass personalization of products and services. The big-data revolution is already happening, with hundreds



of applications already in use, for instance, tracking millions of chickens from farms in Thailand to family tables around the world, or monitoring the location in real time of every emergency vehicle in a major city like Chicago. Over the next few years, it will spread across every industry and scientific discipline.

Printing Dreams: Three-dimensional printing is a manufacturing technology that creates specific objects from buildings to machine components, and even human organs, either by laying down layers of material or carving away from a block of existing material. It's been around for several years but will soon influence everyday life.

Using new materials such as molten polymers and metal powders, highly focused lasers and, increasingly, nanotech, 3-D printing is an incredibly powerful design and modeling tool. Because it offers the potential for the same economies at any volume, this technology, especially when it gets bolted to big data and nanotech, rewrites the very notion of economies of scale. It could transform manufacturing, eliminating the current cost advantage enjoyed by developing countries and bringing jobs back here.

You can already find hundreds of consumer products, from furniture to jewelry, created with 3-D printing. Less obvious are the thousands of gears, motors and other industrial components that are now custom-fabricated this way. Says computer scientist Christopher Barnatt, "[Imagine] a future in which the everyday 'atomization' of virtual objects into hard reality has turned the mass preproduction and stockholding of a wide range of goods and spare parts into no more than an historical legacy." Then, imagine that future with the 3-D printer in your home.

Handheld Diplomas: The discrepancy between the cost of university tuition and the return on that investment for most students grows every year. As students, increasingly priced out of traditional education, begin to abandon the college path, colleges and universities will have no choice but to pursue them—with ever-greater numbers of virtual

courses (and eventually degrees)—on laptops, smartphones and tablets. This shift is already beginning to transform higher education and bring in a host of new competitors. Its potential to raise educational achievements in K-12—where rising costs and diminishing results are even more out of control—could be even more revolutionary. And apart from formal schooling, why can't the Internet be harnessed to embed education into the daily life of people at any age, and wherever in the world they live?

Self-Health: While Washington, the national media and the general public focus on draconian responses to the rising costs of health care, for-profit businesses are busy inventing small, affordable solutions. For example, there are now more than 12,000 new health-care apps available from independent developers for the iPhone and iPad. Examples includes the iTriage, which lets users check their own symptoms and find a nearby health provider, and iBGStar, a blood tester for diabetics that connects to the iPhone and lets users sync and manage information from test readings.

Meanwhile, the first of scores of new home diagnostic and monitoring devices—small, affordable, and increasingly connected to health professionals via the Web—are now appearing on the scene. They promise greater drug regimen adherence (the current failure of which is a huge social cost); early identification of everything from a drug reaction to a heart attack; better maintenance of chronic diseases such as diabetes and hepatitis; and virtual doctor visits that make use of home monitoring devices and tools such as Skype.

It's all on the way. Together, these trends offer the potential for a golden era. Getting there won't be easy, as we are currently governed by leaders who want to manage our complex and dynamic economy from the top down, to tame entrepreneurs with regulation, to tax the productive and, ultimately, to pick the next generation of winners. That's never worked well and isn't working today. But a better world awaits us if we elect leaders who can imagine a better future and fight to unleash the animal spirits of the market that will get us there.



The Charm and Challenge of Change

Craig Knutson, Oklahoma Academy Research Group, Norman

“You must welcome change as the rule but not as your ruler.” Denis Waitley

My interpretation of our Town Hall theme suggests that much will and must change over the next 20 years to achieve the future state of prosperity, as originally envisioned using the scenario thinking/planning process from 1998-1999.

I’m reminded of my Quality Is Free (Crosby Quality College) training days at SBC and the importance that management and quality gurus like Peter Drucker and W.E. Deming had on corporate processes.

One of Deming’s more famous quotes was: “It is not necessary to change. Survival is not compulsory.” Looking back over the past twenty years, how many companies, organizations, products, technological tools and ecological species, once prevalent in 1992, are no longer among us ... except in written and pictorial form? Go back forty years (1972) and the changes are even more dramatic. Indeed, survival is not compulsory!!

I wrote a STEEP Blog for the Academy’s website explaining how we used scenario planning/thinking 15 years ago to develop Oklahoma’s four futures. The stories are rich and very relevant in most cases with the realities we face today (see www.okacademy.org/STEEP-Blog-Knutson.html).

Peter Schwartz, in his book *Art of the Long View*, wrote “Every year, every decade, we are surprised by social or technological upheavals that appear suddenly, surprisingly.” Perhaps we need to foresee surprising events and discuss those possibilities through the prism of STEEP factors.

In developing this article, I thought: what is the best way to imagine 2032 and the likely changes

in all the S.T.E.E.P. factors we considered in 1998-1999? I decided to use Google and then Wikipedia to identify key events in the years 1972 and 1992, then to compare those to what we see today. As an aside, neither Google (formerly named BackRub) nor Wikipedia existed in 1992!!! They were formally launched in 1996 and 2001, respectively. That alone ought to tell you that change has gone from arithmetic to geometric . . . with no signs of abating.

Social: So, how much change have we seen? Under social we have marched steadily upward in the area of educational attainment. In the US, those ages 25-34 with a bachelor’s degree or higher, have risen from 16% in 1972, to 24% in 1992 to 33% in 2012. This is a critically important factor to our competitive standing in the global marketplace. The ability to think critically and creatively, problem solve and provide excellent customer service are keys to success. The fact that Oklahoma still lags the US in educational attainment is cause for concern.

Technology: Perhaps no category has undergone greater change than technology. In 1972, for instance, Hewlett Packard introduced the first scientific, hand-held calculator (HP-35) for \$395. In that same year Atari introduced its first generation of video games with the release of PONG!! By 1992, AT&T released its first video phone for \$1,499 and Windows 3.1 was released by Microsoft!!

Today, we have not just the Internet (which now serves over 2.2 billion people) but Internet2 and Nanotechnology, which allows for the manipulation of matter on an atomic and molecular scale. Finally, I must mention Steve Jobs and his iWorld of interactive devices: power and speed with reduced sizes and prices!!

***“It is not necessary to change.
Survival is not compulsory.”
W.E Deming***



Economic: The economic changes have also been quite dramatic. The Dow Jones Industrial Averages, which was founded in 1896, broke the 1000 mark for the first time in 1972. By 1992, it has risen to a high of just over 3400. In 2012, it has risen as high 13,200!! While some may prefer to use the S&P, the fact remains that companies have remained quite profitable, and their investors have continued to benefit.

Environment: How we produce our electricity greatly impacts how environmentally aware and sustainable we are as a culture. Coal, which remains the most environmentally degrading source of electricity, has remained the number one source at around 45% ... but was as high as 53% in 1992. Natural gas generated 21% of all electricity in 1972, dipped to 13% in 1992, and now accounts for 24% of all electrical production today. Given recent trends, that percentage is likely to climb. Petroleum, on the other hand, represented 16% back in 1972 and has now dropped to 1%.

Nuclear power, which produced 3% of our nation's electricity in 1972, rose to almost 20% in 1992 and remains at that level today. The Japanese tsunami has everyone re-thinking its future. Hydroelectric generated 16% of all electricity in 1972; and has fallen to 6.2% today. The other renewables have risen from almost 0% in 1972 to about 3% today. What will power our cities and factories tomorrow? There are a number of clues buried within this data (e.g., hydraulic fracturing).

Political: Finally, the political changes have been volatile. Dictatorships have declined and democracies have exploded; wars, as an attempt of one country to impose its will on another, have declined over the past 20-40 years. The violence of the 70s (Vietnam, Munich Olympics Terrorist Attacks, etc.) was followed by more treaties (Masstricht, NAFTA) and peace talks (Israel/PLO) in the 90s. While the Putins, Assads et al remain in power, the significant reductions in nuclear arms and increased weapons inspections make the world we live in today RELATIVELY safer. Now if we can just get domestic politics to behave more like the Oklahoma Academy, we'd all be in a better and more optimistic place.

Change: The above was an attempt to highlight the remarkable number and degrees of change over a twenty (forty year) period of time. Most of the events/outcomes were not forecast by econometric models nor predicted by wise soothsayers. Many of them, however, resulted from the individual or collective efforts of people who possessed the ingenuity, patience, insight, intelligence, perseverance, clout, political will and vision found in people like you and me.

Think Senator Robert S. Kerr (OK) and Senator John McClellan (AR) (Port of Catoosa-McClellan-Kerr Arkansas River Navigation System, our inland waterway to the Gulf Coast); think OKC Mayor Ron Norick, Ray Ackerman and Mike Knopp (MAPS and the world class investments/events on the Oklahoma River); think Clay Bennett, Sam Presti and Scott Brooks (the meteoric rise of the OKC Thunder). By listing but three I failed to do justice to the many other "dreamers" who created CHANGE in Oklahoma.



Painting of U.S. Senator Robert Kerr by Charles Banks Wilson. Displayed in the State Capitol Rotunda

Keep in mind that the dust bowl of 1933-37, followed by the massive flooding of the Arkansas River Basin in 1943 led the “visionaries” to plan, cajole and CHANGE the face of commerce in NE Oklahoma. Ron Norick had to convince powerful anti-tax forces in OKC that “investing in yourself” could create a future brighter, more vibrant and attractive for its people and for outside investors.

Ackerman and Knopp had a vision of a river (N. Canadian) that we used to mow three times a year, where world class rowing and kayaking now flourish. It is even the site for Olympic and Paralympic training in these events, CHANGING the image of Oklahoma dramatically from hot and dry (dust bowl era) to cool and prestigious (Harvard Princeton and Stanford compete here!) And in a MUCH shorter period of time, the NBA-

less Oklahoma City metro now roots for the OKC Thunder in the NBA Finals. The image CHANGE for this state in international markets has changed overnight.

Price Pritchett once remarked: Change always comes bearing gifts. Some are unwelcome and some we can’t now live without. But if we approach this Town Hall with an appreciation that change will occur and we can play a role in anticipating how that change may impact us, we will all look forward to a more knowledgeable and confident future. As Denis Watley suggested let’s be the “rulers” of Oklahoma in 2032.

Enjoy the process and the people who committed their time, energy and dreams to make Oklahoma more prosperous.

PLANTING STEEP “SEEDS”

Social-Technology-Economic-Environment-Political



Section 1

Academy Member's Forum



Importance of Data

Cynthia Rolfe, PhD, University of Central Oklahoma, Edmond

Cynthia E. Rolfe, Ph.D., is the Vice President for Information Technology and Chief Information Officer at the University of Central Oklahoma. She has served other universities as a tenured professor; director of academic technology; and assistant vice president for academic affairs. Cynthia was the first Chairman of the Board of Directors of the Edmond Area Chamber of Commerce from an academic institution.



Using data as a reference removes personality from the discussion because data is a compilation of the lowest common denominator of fact. Without thoughtful interpretation, data is rendered useless – a compendium of bits and bytes in human readable form. Therefore, one wonders: “What is the importance of data?” – when we are really concerned about information.

Datum. Data. Metadata.

Common terms as these are used frequently in conversations from the local coffee shop to national network news. In this age of knowledge and information we often refer to data as the definitive answer to a given challenge. We build spreadsheets, reference charts, and post graphs. We rely on data to support our points of view. Yet to discuss data, one must be clear about the definition. Exactly, what is data?

While the word is commonly used both as singular and plural nouns, data actually is the plural form of the word datum. Data is a collection of numbers and/or letters stored in a file cabinet of sorts, whether in paper or electronic form -- or even in one's mind. Data that resides in cyberspace and has administrative information attached to it is termed metadata – data that describes data.

Some people use the term data when speaking of information, which is technically inaccurate. Data is factual, non-committal, and interpretable. Data becomes important when it has been determined to be relevant and related to a particular topic or knowledge set. Therefore, interpreted data is used for decision making. The real value of data pragmatically resides in the formatting and presentation of the elucidated facts in order to prove a point.

During a recent legislative session, some citizens were surprised to learn that at least one representative openly admitted he had no interest in the data provided by the side opposing his legislation. While the immediate reaction was shock, thoughtful consideration of the legislator's statement yielded enlightenment. Legislators, as most people, are interested in how a situation or person makes them feel. Others do not care about your data as much as you do. Does this speak to level of understanding or to level of confidence in the data or the interpreter? Likely, not.

Research has shown that even given factual data, most people will dig their heels deeper into their predetermined convictions – their feelings about a concept. So why do we continue to gather and interpret data?

Data continues to be the foundation upon which the critical thinker relies for logical decision making. We continue to gather facts and figures; yet more importantly, we translate those data into meaningful information that is discernible for our audiences. We make our points salient by providing proof. Often, our interpretation results from omitting pieces of the puzzle or through a lack of understanding of facts.

So let us raise our glass to data – let us graph, chart, and spreadsheet our way to meaningful information. Because armed with our data – we know we are right!



Importance of Education Transformation

Amy Anne Ford, Member, State Board of Education, Durant

Quick question: When is the last time you thumbed through a massive yellow pages doorstep to look up a phone number? Used a typewriter? Asked someone for directions?

And how many of us can remember the last time we bought a map? I mean an honest-to-goodness paper map. One of those awkward folding things you used to stuff in your glove compartment? I'm guessing it's been awhile. Why? Because we now have "an app for that."



ever seen and that their children must be prepared to succeed in this new environment.

Fortunately, our schools are filled with caring and committed educators. They are, however, burdened with delivering the same model of education for students that our country offered 50 years ago, essentially a twentieth century industrial model. While this worked fine for students in the past, it is not meeting the needs for a new century.

Whether it is on our smartphone or a GPS device in our car, the need for the "impossible to fold paper map" has been transformed into the simple press of a button, the flick of a wrist or even a voice command. We must embrace this sense of change — that it should not be feared, delayed, or ignored — when we examine how we educate our children in this country.

Transformation, a noun meaning: to change, shift, revamp — all terms that can create angst. Yet 2012 has been a year of profound change from technology: In one single weekend in August, people across the planet witnessed a new rover landing on Mars and a double-amputee competing in the London Olympics while running on carbon-fiber blades. We are in a time of a historic transformation — technology and information are altering every aspect of our society. And that must include education.

As a relatively new member of the State Board of Education, often I hear from constituents in my area of the state about their concerns and hopes for Oklahoma's education future. Consistently, I hear aspirations from parents for more choice, more accountability, and a desire for more availability of technology and innovations. Parents understand that the world is changing at a pace unlike any

But rather than focus on negatives, it is time to look for opportunities. Oklahoma has a plan of action. Earlier this year, the State Board passed a resolution expressing firm support for the goal of having all students in Oklahoma college, career, and citizen ready by the year 2020 — what we call the C³ Plan. We passed this resolution because we recognize that this year is a critical "flex point" for education, not only in our own state but also across the country. The C³ Plan represents an important shift, and not a moment too soon.

The C³ Plan achieves this shift with four major components: 1) Leadership in the classroom and empowerment of parents 2) an emphasis on literacy and 21st-century critical thinking skills 3) a shift toward more accountability and rigor and 4) an embrace of the learning revolution offered by innovations in digital learning and choice.

Will this be easy? Absolutely not, and no one is underestimating the scope or challenge presented as we reform our educational system. We are asking much from professional educators statewide, and they are rising to the challenge. But they will not succeed without the support of us all. As parents, taxpayers, and citizens we simply cannot fail the children of this state. We owe it to them to ensure that this transformational vision becomes reality.



Importance of Exporting

Steve Miller, PhD, Oklahoma State University, Stillwater

The U.S. has the largest economy in the world. Given this fact, a company may be content with a domestic focus.. However, for long run success, it is important for them to at least consider export markets. Consider a simple statistic—95% of the world population lives outside the U.S. Companies should explore foreign market opportunities, especially since most markets in the U.S. are domestically mature (e.g., oil/gas equipment, packaged foods,) versus growing in developing countries.



Global Division and the Oklahoma Department of Agriculture: host foreign business visitors seeking suppliers; maintain trade offices in the Europe (FDI Only), Middle-East (Israel), Mexico, and the PRC; arranges missions to industry trade shows (e.g., aerospace, oil/gas); and provides trade opportunity research data. One program, STEP (State Trade

and Export Promotion), provides seed funds for companies attending the various foreign trade shows. Another very significant governmental provider of export assistance is the Oklahoma District office of the U.S. DOC/ITA. It provide one-on-one consulting assistance to potential exporters and, in cooperation with the Oklahoma District Export Council, conducts export education workshops and an annual world trade conference. Higher education institutions provide international business degree an experiential programs and educate thousands of international students, while many higher education and Career Tech institutions provide non-degree export training programs.

Oklahoma Exports

Many Oklahoma companies aggressively export their products and services. It is estimated that over 2,400 companies currently export. Total exports of manufactured and agricultural products in 2011 reached \$6.2B. This was an increase of 41% from 2009 to 2011. Approximately 22.5% of all manufacturing workers in Oklahoma depend on exports for employment.

Canada is Oklahoma's larger export trade partner with a 31.2% share followed by Mexico with an 8.42% share. In total, the top 10 export markets account for two-thirds of the total exports and include countries in North America, Asia, Europe, South America, and Australia. Clearly, Oklahoma's export reach is global.

The diversity of exported products reflects the balanced nature of Oklahoma industry. Leading industries include aero-space, valves/tanks, meats, pumps, medical equipment, and automotive parts and accessories among others.

Support for Exports

The decision to export is the prerogative of the company. However, it is important for the Oklahoma business environment to be export-friendly.. Oklahoma has foundation support. For example, the Oklahoma Department of Commerce

Non-profit organizations such as the Oklahoma Governor's International Team and the Tulsa Global Alliance host business and cultural events that accent international involvements.

A final piece of the export development puzzle concerns business infrastructure support and professional services organizations. These include freight forwarding businesses, international lawyers, international trade banking services, etc. Such forms of business assistance are of particular importance to small/mid-sized businesses. Such organizations are modestly available in Oklahoma and merit expansion.

The Oklahoma Challenge

Oklahoma must continue to advance as a key player in the global economy. Our challenge is to establish and maintain a business environment that encourages companies to seek international opportunities and supports their initiatives.



Importance of Logistical Infrastructure

Tim Burg, CEcD, Executive Director, SEDF, Shawnee

Mr. Burg is the Executive Director of the Shawnee Economic Development Foundation in Shawnee, OK, a public/private partnership between the City of Shawnee and the local business community. The organization is dedicated to building the economy of Shawnee and the surrounding region.



Tim is a 2005 graduate of the Economic Development Institute of the University of Oklahoma, (OU/EDI). He earned designation as Certified Economic Developer (CEcD) in 2006.

He is currently a member of the Governors International Team, a member of the Oklahoma Economic Developers Council and the International Economic Development Council. He also serves on the faculty of University of Oklahoma Economic Development Institute. .

Better, Cheaper, FASTER are increasingly critical considerations for our state as we continue to compete in the global economy. Without adequate logistical infrastructure, our state and many of our rural communities will simply fall farther behind or be eliminated from the competitive process all together.

Even in the earliest days as the Indian Nation, Oklahoma Territory and finally as a state, we knew the importance of these critical transportation systems and they in turned helped us settle and grow the state.

Unfortunately as we prospered we have forgotten that logistical infrastructure means more than just roads and bridges, and in some cases we seem to ignore those transportation methods that helped make us what we are today.

In the earliest beginnings as a state we valued the use of our waterways and rail systems. They

were valued as important highways of commerce and served the betterment of our citizens.

It is in the opinion of this author that we have been ignoring the importance of freight rail delivery systems in Oklahoma, which has an adverse affect on the ability for our businesses and communities to prosper.

If we truly look at the history of the settlement and economic growth of the state, we will see that railroads were indeed the key factor in supporting our economic development and growth. Today our focus is on the improvement of highways and bridges takes precedent over all other forms of logistics.

Indeed highways are absolutely critical to our state, but without rail and waterway improvements we are limiting our capacity to expand. If we are to remain competitive as a state, and move raw materials or finished products quickly, efficiently and at a lower cost, then we must find creative ways to improve the rail and waterways, while still undertaking upgrades to the highway systems.

Our economy cannot afford to overlook ALL of the tools we formerly used and those that can serve us for decades to come. As a state it is critical that we form a consensus that all of our government agencies and elected officials agree upon.

Without a clear direction, and a united effort, we will continue to waste time and effort on a plan that does not consider every aspect of logistical infrastructure.

While it is easy to ignore certain aspects of the delivery systems we could and should improve, it will be foolish to ignore those items that are critical to helping us grow the economy of Oklahoma.



Importance of International Groups

Mary Jane Calvey, President, Real World Solutions, Oklahoma City

The second time the music changed I noticed. Traveling to Bansko, Bulgaria for a Rotary International project that provided cardiac monitoring equipment to a small hospital in the mountains, I was enjoying a few hours of walking around this charming town and walked into a local bistro for lunch. Almost immediately, the music switched from local folk music to rap. The proprietor was trying to make me feel welcome by playing “western” music just for me. The world is indeed getting smaller.



strengthening those links and helping us find opportunities, and friends, across oceans and space.

As more businesses expand their markets and as more people travel for education, service projects or just pleasure we find comfort in knowing that certain things such as Air Traffic Control Standards, or the Red Cross as there worldwide. We also discover similarities between our cities and towns and communities around the globe.

In 2032 the world will be even more interconnected. New methods of communication and travel will enable Oklahoma businesses and people to forge strong links worldwide. Businesses in Oklahoma will recruit the “best and the brightest” from all over the world for their job openings. International groups play a large role in

The global import and export of culture adds richness to our lives. When you travel overseas or even when you interact with recent immigrants here, take the opportunity to expand your horizons instead of looking so hard for things that feel familiar and comfortable. That is the way we become global citizens.

The following examples typify the International Groups Oklahomans are already using for commerce and for friendship:

- Standard setting organizations such as those dealing with time, weights and measures. All time is linked to a clock in Greenwich, England and all time zones (China has one and Russia has 7 or 8) relate to that standard. Similarly, a meter is a meter is a meter, and a pound, a pound.
- Regulatory Standards such as the International Law of the Sea, and the Geneva Convention protect waterways and troops fighting for their countries. Not all nations subscribe to these types of regulations, but emerging nations seeking to participate in the global community generally adhere to these regulations.
- Peacekeeping and Mutual Support Pacts such as the United Nations and the North Atlantic Treaty Organization (NATO) help maintain order and engage in emergency relief efforts.
- Trade Organizations such as International Standards Organization. The International Financial Reporting Standards Board is currently pressuring the US to adopt those standards to replace the FASB rules in force in the US. But at least accountants can review the rules in both instances and understand what details a firm is reporting.
- Humanitarian Organizations such as the Red Cross and Red Crescent have world-wide reach.
- Service Organizations such as Rotary International and Kiwanis have clubs and do projects in many countries. Organizations such as Girl and Boy Scouts have an international presence.
- Religious organizations such as the Catholic and Episcopal Churches, Jewish and Muslim organizations promote their faith around the world.
- The Sons of Ireland, the Vietnamese community here and other Ethnic Groups celebrate their culture in many countries.



Importance of International Groups

Sandra Longcrier, Fellow PRSA, Manager of Enogex Communications, Oklahoma City

Sandra Longcrier joined OGE Energy Corp. in 2004 and currently is Manager of Communications at Enogex - the natural gas midstream subsidiary. She also worked at SBC-Southwestern Bell Telephone and at the Oklahoma State Senate. She earned her B.A. and M.A. degrees at the University of Oklahoma and loves to travel internationally.



International groups--whether for profit, nonprofit or governmental--provide excellent partners for business, education, social, scientific, regulatory, humanitarian, and religious initiatives. Oklahoma has connections throughout the world through its citizens and their friends, families, coworkers, suppliers, teachers, preachers, researchers and government entities.

These groups are intimately familiar with and sometimes are part of the development of local standards, laws, rules, and customs. They provide a forum for a community of like-minded people, increasing the likelihood of success for all involved in projects and programs. Often the group has the clout to accomplish a task that an individual cannot, for example, improving living and working standards, opening doors to investment, building infrastructure, and getting the right people in a room to collaborate on an opportunity. These organizations serve as advocates and intermediaries and can help bring a program or project to scale.

Economic power is shifting across the planet as reflected in the 2011 foreign direct investment (FDI) numbers recently reported by the UN Conference on Trade and Development. Of the \$1.52 trillion invested across borders in 2011, 28% went to countries in the European Union, 24.6% to Asian economies, and 14.2% to Latin America. Powerful examples of international groups in this arena are the regional trade blocks (i.e. the European Union) that help their members navigate the increasingly aggressive global marketplace.

In Oklahoma we have many current examples of collaboration with global groups that create positive results.

Business/Military: Oklahoma's initiative to develop all aspects of the growing Unmanned Aircraft Systems (UAS) industry for commercial and military markets both in the US and internationally, includes membership in organizations like the Association for

Unmanned Vehicles Systems International that provides a world stage for like-minded men and women from more than 60 countries.

Humanitarian: World Neighbors headquartered in Oklahoma City cites partnerships and investments in local leadership and organizations in the countries they assist around the globe for decades of successfully building sustainable community support systems for millions of people.

Educational: Oklahoma State University partners with the University of West Cape in South Africa to offer students the opportunity to consult with and learn from disadvantaged entrepreneurs in the Black townships near Cape Town, South Africa, furthering developing them for leadership in their colleges, their careers and their communities upon their return.

Scientific: The National Oceanic and Atmospheric Administration (NOAA) and the National Science Foundation (NSF) support an initiative of the National Severe Storms Laboratory in Norman which involves more than 100 scientists and university students and staff from around the world collecting weather measurements to study tornadoes from all angles.

It is through continued partnerships with international groups like these that Oklahomans will open doors to collaboration, to friendships, and to success.



Importance of Study Abroad

Mary S. Benner, Director, Academic Services, Oklahoma City University

Mary Benner is the director of academic services at Oklahoma City University. Mary grew up in Connecticut and on Cape Cod in Massachusetts, studied and worked in New York and lived in Austin.



When the Thunder won the Western Conference finals this year, the reaction of the TNT sportscasters was one I've encountered many times. "OK-la-Ho-Ma City," one announcer kept repeating, with a combination of respect and admiration mixed with a hint of surprise that bordered on amazement. Here was this talented team supported by exuberant and dedicated fans in *OK-la-Ho-Ma City*. Who would have thought it?

I'm familiar with this reaction because I've heard it many times from friends and family back East who are surprised that I would live, and live happily, in *OK-la-Ho-Ma*. I've heard it from colleagues around the U.S. and abroad who, like those Eastern family and friends, usually put a question mark or an exclamation point at the end of *OK-la-Ho-Ma* when they learn where I live.

John Steinbeck, Rodgers and Hammerstein and Timothy McVeigh all created powerful images of this state and—when we consider these divergent images together—we begin to understand that hint of surprise that results in the oft-heard question mark. *OK-la-HO-Ma?*

A frequent result of sending Oklahoma City University students abroad is not just that they return with new perspectives on the world but also that, as ambassadors for our state, they help to transform the question mark into the kind of respect and admiration that I heard in that TNT sportscaster's voice. When we send students abroad, we raise the reputation of our state among citizens from the other forty-nine U.S. states and from countries around the world.

Study-abroad partners frequently describe our students as "delightful," "engaged," "outgoing," "smart," "a pleasure to host," and, of course, "friendly." As someone who has lived in other places, I can certainly attest to the friendliness of Oklahomans.

Unfortunately, I can also attest to some of the stereotypes about Oklahomans.

We're the Joads' neighbor Yuley who wants to know who he can shoot when the bank forecloses on his farm in *The Grapes of Wrath*. Somehow we're not credited with the quiet strength and determination that Steinbeck depicted most clearly in Ma and Tom Joad.

Many remember images of the destroyed Murrah Building but forget the heroism Oklahomans demonstrated following that tragedy. For many Americans, Oklahoma is a place they drove through once. It is viewed as a state lacking in culture, natural beauty and diversity. It's a place with oil wells, conservative politics, good football, and not much else. For many who've never been here (if they have thought of Oklahoma at all) it certainly is not a place they have considered to live, study or work. One way to change this opinion of Oklahoma and Oklahomans is to send our students abroad and attract more students from abroad to our universities.

I'll never forget a presentation by a political science major who had spent a semester studying in Denmark. He explained that his first bout with culture shock came when he met his fellow U.S. students, who were primarily from East/West Coast universities. This student encountered a double whammy of stereotypes as a Hispanic American from Oklahoma, and he struggled to overcome some of his stereotypes of "damn Yankees," "California surfers" and "spoiled rich kids."



These types of interactions—on neutral ground so to speak—certainly were enriching to all the students involved, as they discovered their commonalities and differences while navigating Danish culture together. Ten years from now, when that Oklahoma City University student wants to do business with a New Yorker, he'll remember the friendly New Yorker he met in Denmark. And when that New Yorker wants to do business in Oklahoma, she'll remember the smart Hispanic American guy from Oklahoma she met while studying abroad.

These connections will serve Oklahoma well. When the student becomes an entrepreneur, a politician, an artist, or an executive, having contacts across the country and around the world benefit that student. When the entrepreneur wants to do business abroad, he has the tools to recognize cultural differences and successfully navigate them to build successful partnerships. When the student becomes an Oklahoma doctor and encounters a patient from a different culture, her study-abroad experience will have helped her develop the skills and understanding necessary to treat that patient with the appropriate dignity and respect. On an individual basis, the benefits of studying abroad are well documented.

The three student essays (see companion Town Hall Volume 2) illustrate some of the challenges encountered and stereotypes shattered when students study abroad. Eveline Gnabasi thought that her books would prepare her for daily life in China. Shamari Reid was pleasantly surprised when the Argentines weren't unfriendly, as others had told him they would be. Madison Alexander caught herself viewing women's dress through the lens of the conservative Islamic perspective.

In reading their essays, it's obvious that the benefits of studying abroad are enormous for individual students. What may not be as obvious are the benefits to Oklahoma when our students study abroad.

Just as U.S. students tend to think only of major cities when they consider where to study abroad, so too do students from other countries think only of major U.S. cities when they want to study here: New York City, Boston, Chicago, San Francisco are popular destinations.

My colleagues at foreign universities admit that it's difficult to "sell" Oklahoma City to their students who want to study in the U.S. And yet, students who have spent a semester or year in Oklahoma City tend to speak highly of their experiences, and their common complaints are no surprise: the

lack of public transportation, the heat or biting wind, and the drinking age.

Richard Florida writes that only 33 percent of Oklahomans possess

passports. (*The Atlantic*, March 2011) Florida's article demonstrates correlations between the number of passport holders and states' median income, their level of education, and their percentage of knowledge-based or creative jobs. Study-abroad programs should be a major state strategy. Encouraging our students to study abroad will benefit them by expanding their minds and their opportunities, and they will serve as ambassadors for our state.

It's a win-win situation. We can point to a variety of reasons for our state's negative reputation among many who have never been here, but I think we can all agree that hearing *Ok-la-Ho-ma* uttered with admiration and respect beats hearing it followed by a question mark.



Importance of Civic Balance

Howard Barnett, Jr, President, OSU-Tulsa and OSU Center for Health Sciences

Howard Barnett serves as the president of OSU-Tulsa effective October 5, 2009 and president of the OSU Center for Health Sciences in Tulsa. Howard had previously served as chief of staff for Governor Frank Keating and as the Oklahoma secretary of commerce.



He earned a juris doctorate from Southern Methodist University and a bachelor's degree in business administration from the University of Tulsa.

The size and role of government has been debated since the founding of our Republic (Jefferson versus Hamilton). While asked to write on "size and role", I will focus on "role" as that is what drives size. The cause of larger government is the choices we as a people make on what roles we want our government to play.

At the state level, though we may disagree on the specific actions to be taken, most can agree that there are several important and legitimate roles for government. The most obvious are (and these are listed in the descending order in which I perceive consensus on their appropriateness): public safety, transportation infrastructure, education and health and human services. Not coincidentally, these four areas comprise over 90% of the state's budget every year.

At the national level, the debate over "Obamacare" is framed by its opponents as an inappropriate expansion of the role of government. In Oklahoma too, health and human services also seem to dominate the discussions about government overreach, but we also have debates over the role of government in such things as the State Arts Council and state parks and museums.

I find the debate over immigration policy to be a good micro-issue to look at the role of state government. No one seems to disagree that it is a legitimate and necessary function of the national government to set and enforce immigration policies. Does the state have a role?

The Recent Supreme Court decision would seem to say that the State can act in conformity with the national laws but cannot make its own, different laws. What makes this debate so interesting is that the voices which are loudest in wanting the state government to act are usually also those who would be identified with a smaller government agenda.

Ultimately, in the United States and Oklahoma, the answer to the question of the role of government is a philosophical and political one that is personal to each of us. Should we help the poor among us? Most say yes, but where the line is drawn on what services to provide and for how long is argued endlessly. Providing public education is viewed as necessary but then we argue over funding, vouchers and charter schools.

"The legitimate object of government is to do for a community of people whatever they need have done, but cannot do at all in their separate and individual capacities." Abraham Lincoln

The problem is that for most state governmental functions there are private sector competitors and some

would say that we should simply be an aggregator of funding and a super contractor. For the most part, that is how the transportation infrastructure and providing of healthcare is done (the state does not employ doctors to deliver services to Medicaid recipients). How about public safety? Private prisons exist and are used. Education? Charter and private schools.

Ultimately the decision on the role of government in a representative democracy like ours is decided as it should be – by the ballot. We get the government we elect.



The Importance of Civic Balance

Gary Banz, State Representative, Midwest City

Gary Banz is a retired public school educator who served in Putnam City, Ada, and Midwest City High Schools. He is a graduate of Southern Nazarene University and earned a Master's in Education from the University of Central Oklahoma in Edmond.



“If you don’t know where you are going, you will probably end up somewhere else.”

That was one of many messages prominently posted on the wall of my classroom. When we contemplate what a future state government will look like, we must shape any change from the current “status quo” with an understanding of where we are today and our roots as a nation and state.

Our nation began with a clear picture of the role of government. After naming unalienable Rights of “Life, Liberty, and the Pursuit of Happiness” the Declaration of Independence follows with the phrase, “That to secure these Rights, Governments are instituted among Men, deriving their just Powers from the Consent of the Governed.”

The primary function of government is to protect, and it is the responsibility of the “governed” to ensure that power is controlled.

The preamble of the U.S. Constitution ends with “do ordain and establish this Constitution for the United States of America.” Our U.S. Constitution guarantees a republican form of self-governing based on democratic principles. To address their understanding of the nature of man the framers selected a federal system which divides power between a strong central government and equally strong regional governments called states. This state sovereign power is further supported by the adoption of the tenth amendment which states that

all power resides with the state unless it is enumerated to the federal government or forbidden to the states.

Our Oklahoma roots clearly gave us a constitution that sought additional limits on power and authority. Oklahoma’s Constitution mirrors the federal model with three branches of government but divides the executive by separately electing the Governor and Lt. Governor

and uses agencies, boards, and commissions to carry out many of the executive functions. Additional safeguards against abuse by government are found with use of the legislative referendum and initiative petition process.

Oklahoma became a state when modes of transportation and communication were very primitive. Most of the state, county, and local government functions were designed for that rural setting.

Can we afford to keep eight officers in each of the 77 counties? How long can we maintain more than 500 public school districts? Do we have too many higher education institutions? Is it possible to think about changing the number of legislators needed to do the people’s business at 23rd and Lincoln?

Most agree that the “core four” functions of state government center on education, public safety, transportation, and health care. Is it possible that advances in technology will allow for change that would create additional funding for the challenges we face today?

A federal system based on a limited government of enumerated powers and free markets driven by consumer demand has served us well. Do we want outsiders forcing Oklahoma to act or do we want to determine where we would like to go and set in motion a plan of action to take us there?



Importance of an Educated Workforce

Phil Berkenbile, EdD, Oklahoma CareerTech, Stillwater

The importance of an educated workforce cannot be overestimated. In a recent publication, *The Career Pathways Effect – Linking Education and Economic Prosperity*, sponsored by the National Association of State Directors of Career Technical Education Consortium and the Center for Occupational Research and Development, authors suggest changes in the labor market and helping workers transition to that market may be among one of the greatest challenges our nation faces as we enter the second decade of the 21st century.



Within the U.S. economy there is growing evidence of a skills gap in which many young adults lack the skills and work ethic needed for many jobs that pay middle-class wages. Skills required are not merely hard technical skills but soft skills - the ability to work in teams, communicate and demonstrate a strong work ethic for example - skills that are more likely to be learned in postsecondary settings than in high schools. The realities of our economy demand both types of skills. (*Symonds et al, Pathways to Prosperity.*)

The publication cites several studies that support the need for the United States to continue efforts to educate citizens in new and different ways. Authors suggest this is due in part to rapid advances in technology, which increase the demand for certain skills while rendering others obsolete. The rise of global commerce, the demand for high-level skills, skills gaps and the need for workers in science, technology, engineering and mathematics are additional reasons education is important to the workforce.

One reason the U.S. education system is falling short is that it continues to take a one-size-fits-all approach. The whole system is geared to transitioning from high school to a four-year degree, writes Anthony P. Carnevale in *The Undereducated American*.

“You need to have more than a one-size-fits-all. Everyone assumes education is very linear - you get a high school degree, you go to college and you go to work.

The truth is, the issue for most people is what are they going to do next? A lot of those kids who come out of high school and don't go to college end up wandering around,” writes Karen Farkas, in *Is A College Education Worth the Price?*

So the mission is clear - increasing the number of American workers with the right postsecondary skills and credentials, augmenting the American workforce by several million postsecondary education workers over the next 15 years ... It will raise our educational attainment to a level that is comparable to that of other developed nations, help us meet the economy's need for high-level skills and close the growing gap in incomes (*Carnevale and Rose, The Undereducated American*).

The high school graduation rate still hovers around the 75.5% rate, and fewer and fewer jobs are available for students that do not complete high school. More jobs will require postsecondary education and training from CareerTech and/or the community colleges.

As we continue to move an Educated Oklahoma Workforce forward, it will be necessary to include more Technical Certification and Credentials from Oklahoma CareerTech and Higher Education. This is a partnership that will determine where we go and how far we go in making the Oklahoma economy recession proof by retaining and attracting more companies to Oklahoma, where we will need to meet the ever changing demands of skill enhancement, job growth today and economic development in the future.



Importance of an Educated Workforce

Denise Brinkmeyer, President JUMP Technology Services LLC, Tulsa

Denise is the President of JUMP Technology Services®, L.L.C. She creates enterprise system and search marketing strategies for innovative organizations, commercial and public sector alike. Mrs. Brinkmeyer held positions in the technical industry as a software developer for an ISV startup and a home-school cooperative. Denise is a graduate of Oral Roberts University and is Microsoft Certified Solutions Developer (MCSD) and Project Management Profession (PMP). She serves on the Board of Directors, Oklahoma State Chamber of Commerce, the OK Tech Council, the Tulsa Technology Center Web Programs Advisory Board and is a member of the Oklahoma Academy



for the requirements of a new or improved system. Starting with the common ground and the objectives to which everyone agrees is essential to an innovative process. It is only when stakeholders begin to run away with designs and exclusive requirements too early that the process breaks down. When the breakdown occurs, it is my job as the facilitator to bring everyone back to a place of mutual respect and

agreement. This is the starting point for agreement and the necessary negotiation that must occur. If innovation is to have any opportunity, personal agendas must be put aside.

Having served the system as a former school teacher, a parent of six children, a taxpayer, and now a participant on many education committees, I've begun to suspect that our bottleneck to significant education reform comes from the "battle wounds" that we can't seem to get over. We come to the table with scars, and we want to talk about them. The recurring themes are too hard to ignore whether you are talking about teacher who is underpaid, a parent who can't understand why his child didn't graduate, a legislator tired of being asked to increase funding to a system that everyone complains about, or an alternative education institution being viewed as a dumping ground for dropouts.

I wish I could write a letter to everyone with a "battle wound" and say with genuine sincerity. "Thank you for the role you play."

Innovative ideas will continue to fail until we agree what the game is and how we are going to win. Do we agree that a successful education system is one that ensures that every child who attends becomes a lifelong learner and has the potential to earn a good wage doing a job he is skilled to do? Is that the finish line? If so, it seems we've found the common ground. Let's begin.

A System Designer's Perspective on Education

Watching the Olympics recently, I heard my husband comment on his preferred events. Gymnastic vault scoring is too subjective for his liking. Races, however, have a decided and clear outcome. You either cross the finish line first or you do not.

A ranking is a measure of competitive performance. We're 1st in this, 37th in that, 45th in another. No competition can be won without assigning a place or rank designation to the competitors, but what is the value of a competition that you didn't enter willingly? National assessments are required for federal funding, I understand that; but when it comes to talking about whether Oklahoma's education system is serving our needs why do we spend so much time talking about where we rank on the national scene? The value our system brings to our children and our workforce should be our primary focus, and our frugal nature should want to be 1st in value and last in cost.

As a system designer, it is my job to elicit the particulars from stakeholders as a starting point

Importance of an Educated Workforce

Matt Robison, Vice President Government Affairs, The State Chamber of Oklahoma

Oklahoma's economic vitality is dependent upon our system of education and our ability to meet the state's workforce needs. From early childhood to post-secondary and continuing education, all levels of education should be considered workforce development.

Reforming our education system will always be regarded as controversial, but the demands of our economy must be of utmost importance when considering how Oklahomans are prepared to enter and succeed in the current and future workplace. We should never underestimate the necessity of rigor and high expectations. Our students and current workforce can and must perform at a level consistent with our state's economic needs.

Recent common education reforms, such as requiring appropriate reading skills by the third grade, our new "A-F" schools assessment structure intended to assure parents are aware of their children's school performance and the implementation of enhanced high school graduation standards are designed to better prepare tomorrow's workforce ... but time is needed before marketed results of these reforms will be realized.

With regards to post-secondary opportunities, higher education plays a key role for enhancing the state's entrepreneurial spirit and self-governance. However, students must be aware of our state's economic needs when pursuing an area of study. Our K-12 system must ensure that career pathway instruction is a focus during a child's educational experience. Training career counselors and informing students about the opportunities for all levels of career pathways will



help guide students into areas of study which may not normally be considered. This will prove to be a key to enhancing Oklahoma's economic stability.

As entrepreneurs develop and generate concepts that spearhead job creation and economic stability, access to individuals with the appropriate skills levels is a dire necessity. Students, parents and counselors must also be aware of the

importance of successfully achieving trade skills. Over the past many years, such competencies have been considered to only be used for "dirty" jobs. This is certainly no longer the case. Many trades, traditionally considered "blue collar" jobs, have developed into positions that require a significant level of information and computer technology. The skill level needed for such positions require advanced education deliverable through the state's well respected Career Technology system.

One issue that continues to be one of the biggest factors impeding a quality workforce is the possession of "soft skills". Many employers continuously share concerns that current and potential employees lack the drive to simply work hard, show up to work on time and get along with others. This remains a difficult challenge and one that can only be referenced in the classroom.

There are many challenges facing Oklahoma's developing economy. Creating an educated workforce designed to coincide with our economic needs must be supported. With the enhancing advent of technology, the global marketplace is upon us. We should embrace education reforms that are consistent with our economic trends as well as current/future needs.



Importance of Foreign Direct Investment

Steve Miller, PhD, Oklahoma State University, Stillwater

Economic growth is critical to an enhanced quality of life for Oklahomans. Expansions by existing Oklahoma companies are one avenue for growth. The establishment of companies provides vitality in the marketplace. The state can attract existing businesses relocating or expanding. All are necessary if we are to improve the welfare of our citizenry.

Communities welcome companies choosing to locate in their area as sources for employment, tax revenues, etc. Of particular value to long run growth is the attraction of companies through foreign direct investment (FDI).

The latter companies are typically branch operations of existing healthy companies abroad and may well provide more long term stability of investment than domestic companies. If this is their first entry into the U.S., there may be a multiplier effect as that company's suppliers may follow their investments in the U.S.

Finally, they provide linkages back into those countries for possible exporting by Oklahoma businesses, joint ventures in the host countries, etc.

FDI and Oklahoma

Oklahoma is home to 140 foreign-controlled companies. It is estimated that these entities employ approximately 35,000 Oklahomans. Further, in 2011, 12 foreign companies announced new or expanded investments in the state.

The major countries for FDI are from Belgium, Canada, France, Germany, Israel, Japan, Mexico, Switzerland and the UK. These investments span industries including aero-space, pharmaceuticals, medical technology, wind energy, foods, and automotive parts among others. Many of these countries are also key export markets for Oklahoma. This accents the value of FDI in building reciprocal trade relations.



Attracting FDI

Recruitment of FDI companies has many similarities to the recruitment of domestic company relocation or expansion considerations. These include issues such as: cost of doing business; tax incentives; energy and resource access; transportation availability; workforce availability; and the regulatory climate. Such information is provided by the Oklahoma Department of Commerce, local economic development entities, site location specialist, etc. The state and local communities work together to accent the best match for the investing company. Oklahoma is quite attractive in these regards.

There are some differences in site selection choice when seeking FDI companies, especially if this venture is their first foray into the U.S. Their first thoughts may well be to the coasts where they have familiarity or high-visibility Midwestern states. To our detriment, Oklahoma frequently has a non-image. Thus, we must use care to accent relationships and international-friendly settings. State participation in international trade shows introduces Oklahoma. The collegiate international students become ambassadors for the state upon their return home. Sister City programs provide cross-border community linkages. Hosting of trade mission groups and international visitor programs, take visitors into the local communities.

The Oklahoma Challenge

To attract FDI companies, many metrics making us attractive are similar to those for domestic investors. However, global visibility must be heightened through foreign subsidiaries of Oklahoma companies, healthy export activities by Oklahoma companies, and projection of an international-friendly Oklahoma atmosphere. The projection may be through our education systems, community relationship outreach, hosting of international events, and our personal commitments to cross-cultural understanding and acceptance.



Section 2

Data and Information



Exports: International by Water

Source: PIERS Trade Finance, New Jersey

Tronox is a global leader in the production and marketing of titanium products. Through the integration of its pigment and mineral sands businesses, the company provides its customers a cost-effective dependable supply of brightening solutions for a variety of end uses.

COMPANY	CITY	AMOUNT	PRIMARY
Tronox Incorporated	Oklahoma City	\$179,993,571	Argentina
Tronox Incorporated	Oklahoma City	\$137,023,561	Argentina
Ag Equipment Co	Broken Arrow	\$93,742,749	Pakistan
Baker Hughes Oilfield Operations Inc	Claremore	\$87,273,636	Russia
Phillips Petroleum Company	Bartlesville	\$82,705,899	USA
Holly Refining & Marketing	Tulsa	\$77,151,778	Japan
Wood Group Esp Inc	Oklahoma City	\$75,118,058	Columbia
Musket Corp	Oklahoma City	\$74,913,993	Brazil
Reliable Auto Export	Stillwater	\$57,901,388	Saudi Arabia
Helmerich & Payne (Boulder) Drilling C	Tulsa	\$50,686,742	Columbia
Helmerich & Payne Inc	Tulsa	\$50,686,742	Columbia
Conocophillips Company	Bartlesville	\$50,613,368	Gibraltar
Submersible Pumps Inc	Cushing	\$37,589,013	Libya
Recyclers Of Oklahoma Inc	Oklahoma City	\$36,269,341	China
Helmerich & Payne International	Tulsa	\$31,406,842	Ecuador
Halliburton Energy Services Inc	Duncan	\$25,556,707	UAE
Marisol International Llc	Oklahoma City	\$21,506,211	Malaysia
Kuehne + Nagel Inc	Tulsa	\$20,783,020	UAE
Conocophillips Company	Bartlesville	\$18,983,416	Spain
Linde Process Plants Inc	Tulsa	\$18,811,828	Mexico
Panalpina	Tulsa	\$17,892,898	Brazil
Gerdau Ameristeel Us Inc	Muskogee	\$14,467,792	Peru
Hilti Of America Inc	Tulsa	\$13,763,746	USA
Oklahoma Rig Fabricators Llc	Oklahoma City	\$12,559,453	Indonesia
George E Failing Sales Company	Enid	\$10,723,706	Kuwait
Tronox Pigments Savannah Inc	Oklahoma City	\$7,918,145	Netherlands
Texoma Peanut Company	Madill	\$7,867,398	Germany
Smithco Engineering	Tulsa	\$7,675,408	Thailand
Ace Auto Leasing	Tulsa	\$7,620,199	Niger
Iochem Corporation	Oklahoma City	\$6,679,338	Germany
The Crosby Group Llc	Tulsa	\$5,986,635	USA
John Zink Company Llc	Tulsa	\$5,907,833	Saudi Arabia
Gea Rainey Corporation	Catoosa	\$5,587,305	Columbia
York International Corporation	Norman	\$5,428,626	Puerto Rico
York International Corporation	Norman	\$4,877,961	Puerto Rico
Sulzer Chemtech Usa Inc	Tulsa	\$4,747,705	Columbia
Service King Manufacturing Inc	Stroud	\$4,607,550	Columbia
Southwest Corset Corporation	Blackwell	\$4,351,507	Nicaragua
Global Car Sales	Tulsa	\$3,852,985	Lebanon
Ors Nasco Inc	Muskogee	\$3,523,420	Singapore
Tulstar Products Inc	Tulsa	\$3,359,762	Peru
Remy Inc	Edmond	\$3,268,050	Malaysia
Tronox Llc	Oklahoma City	\$2,756,977	South Korea
Webco Industries Inc	Sand Springs	\$2,651,926	Germany
Padco International Incorporated	Marlow	\$2,321,965	Venezuela
Remy Inc	Edmond	\$2,294,011	Malaysia



Exports: From Oklahoma By Type and Destination

Source: Export Nation 2012, Compiled by Brookings Institution (millions of 2010 dollars)

Industry	Type	Value	Country	Value	Country	Value
Machinery	Goods	\$3,193.3	Afghanistan	\$16.9	Canada	\$2,690.5
Travel and Tourism	Services	1,589.2	Algeria	15.7	Mexico	1,631.3
Petroleum and Coal Products	Goods	1,345.4	Angola	17.1	China	935.1
Transportation Equipment	Goods	1,239.5	Argentina	109.0	Japan	908.3
Business Services	Services	1,146.8	Australia	333.5	United Kingdom	784.3
			Austria	16.6	Germany	583.8
			Bahamas	48.9	Korea	510.3
Royalties	Services	678.5	Belgium	167.4	Brazil	477.3
Agriculture	Goods	641.3	Brazil	477.3	Netherlands	404.5
Chemicals	Goods	606.3	Canada	2,690.5	Singapore	368.6
Freight and Port Services	Services	548.5	Chile	158.7	Taiwan	340.7
Oil and Gas Extraction	Goods	509.0	China	935.1	France	340.4
			Colombia	142.2	Australia	333.5
Fabricated Metal Products	Goods	504.9	Costa Rica	50.5	India	245.8
Computers and Electronics	Goods	501.5	Czech Republic	13.2	Switzerland	242.5
Plastics and Rubber Products	Goods	430.8	Denmark	17.1	Ireland	232.8
Food	Goods	393.9	Dominican Republic	74.6	Italy	198.0
Financial Services	Services	384.2	Ecuador	85.2	Hong Kong	194.7
			Egypt	71.0	Venezuela	169.2
Primary Metal	Goods	341.7	El Salvador	20.8	Belgium	167.4
Paper	Goods	267.5	Finland	16.4	Chile	158.7
Electrical Equipment	Goods	229.9	France	340.4	Saudi Arabia	151.1
Education	Services	199.2	Germany	583.8	Colombia	142.2
Nonmetallic Mineral Products	Goods	186.3	Gibraltar	30.3	Spain	136.7
			Guatemala	44.5	Argentina	109.0
Medical Equip, Sporting Goods	Goods	178.2	Honduras	48.3	Malaysia	103.4
Mining	Goods	114.7	Hong Kong	194.7	United Arab Emirates	100.9
Leather and Allied Products	Goods	112.7	India	245.8	Israel	93.1
Telecom Services	Services	94.5	Indonesia	75.8	Sweden	89.1
Insurance Services	Services	89.2	Iraq	19.7	Ecuador	85.2
			Ireland	232.8	Thailand	84.6
Forestry and Fishing	Goods	50.8	Israel	93.1	Panama	83.3
Apparel	Goods	49.4	Italy	198.0	South Africa	81.1
Beverage and Tobacco Products	Goods	35.3	Jamaica	16.1	Turkey	80.7
Wood Products	Goods	34.5	Japan	908.3	Indonesia	75.8
Printing/Related Support Activities	Goods	32.5	Korea	510.3	Peru	75.1
			Kuwait	30.1	Dominican Republic	74.6
Furniture and Related Products	Goods	14.2	Lebanon	21.7	Russia	71.6
Textile Product Mills	Goods	8.2	Malaysia	103.4	Egypt	71.0
Textile Mills	Goods	5.2	Mexico	1,631.3	Philippines	67.8
Publishing	Goods	3.3	Morocco	20.9	Norway	55.3
			Netherlands	404.5	Nigeria	52.0
			Netherlands Antilles	40.6	Costa Rica	50.5
			New Zealand	39.8	Bahamas	48.9
			Nigeria	52.0	Honduras	48.3
			Norway	55.3	Guatemala	44.5
			Pakistan	17.7	Netherlands Antilles	40.6
			Panama	83.3	New Zealand	39.8
			Peru	75.1	Vietnam	33.6
			Philippines	67.8	Gibraltar	30.3
			Poland	26.2	Kuwait	30.1
			Qatar	26.9	Qatar	26.9
			Russia	71.6	Poland	26.2
			Saudi Arabia	151.1	Lebanon	21.7
			Singapore	368.6	Morocco	20.9
			South Africa	81.1	El Salvador	20.8
			Spain	136.7	Trinidad & Tobago	20.7
			Sweden	89.1	Iraq	19.7
			Switzerland	242.5	Pakistan	17.7
			Taiwan	340.7	Denmark	17.1
			Thailand	84.6	Angola	17.1
			Trinidad & Tobago	20.7	Afghanistan	16.9
			Turkey	80.7	Austria	16.6
			Ukraine	12.2	Finland	16.4
			United Arab Emirates	100.9	Jamaica	16.1
			United Kingdom	784.3	Algeria	15.7
			Venezuela	169.2	Czech Republic	13.2
			Vietnam	33.6	Ukraine	12.2



Exports: Agricultural by State

Source: USDA Economic Research Service, 2000 - 2010, in \$millions

ALFA ORDER				EXPORT VALUE				10 YR CHANGE			
STATE	2000	2010	PCT	STATE	2000	2010	PCT	STATE	2000	2010	PCT
Alabama	488.6	985.3	102%	California	6,444.5	14,060.8	118%	North Dakota	1,081.5	3,316.8	207%
Alaska	21.9	12.4	-43%	Iowa	3,620.8	9,507.6	163%	Wisconsin	913.7	2,585.6	183%
Arizona	682.2	1,247.1	83%	Illinois	3,195.8	7,785.3	144%	Minnesota	2,179.9	6,078.0	179%
Arkansas	1,180.6	2,904.4	146%	Texas	2,790.7	6,933.9	148%	Michigan	866.5	2,330.9	169%
California	6,444.5	14,060.8	118%	Nebraska	2,530.5	6,584.1	160%	Iowa	3,620.8	9,507.6	163%
Colorado	1,049.1	1,728.2	65%	Minnesota	2,179.9	6,078.0	179%	Mississippi	582.1	1,518.9	161%
Connecticut	246.3	201.7	-18%	Kansas	2,105.1	4,818.4	129%	South Dakota	1,232.5	3,209.6	160%
Delaware	129.5	230.5	78%	Indiana	1,756.7	4,501.2	156%	Nebraska	2,530.5	6,584.1	160%
Florida	1,661.4	2,553.6	54%	Missouri	1,364.0	3,519.5	158%	Missouri	1,364.0	3,519.5	158%
Georgia	1,186.8	2,296.8	94%	Ohio	1,468.2	3,456.5	135%	Indiana	1,756.7	4,501.2	156%
Hawaii	150.5	380.8	153%	North Dakota	1,081.5	3,316.8	207%	Hawaii	150.5	380.8	153%
Idaho	773.6	1,524.5	97%	South Dakota	1,232.5	3,209.6	160%	Texas	2,790.7	6,933.9	148%
Illinois	3,195.8	7,785.3	144%	North Carolina	1,630.2	3,065.5	88%	Arkansas	1,180.6	2,904.4	146%
Indiana	1,756.7	4,501.2	156%	Arkansas	1,180.6	2,904.4	146%	Illinois	3,195.8	7,785.3	144%
Iowa	3,620.8	9,507.6	163%	Wisconsin	913.7	2,585.6	183%	Ohio	1,468.2	3,456.5	135%
Kansas	2,105.1	4,818.4	129%	Florida	1,661.4	2,553.6	54%	Tennessee	566.5	1,326.7	134%
Kentucky	1,352.7	1,998.9	48%	Washington	1,284.0	2,496.5	94%	Louisiana	555.9	1,290.9	132%
Louisiana	555.9	1,290.9	132%	Michigan	866.5	2,330.9	169%	Vermont	50.2	116.1	131%
Maine	121.3	179.7	48%	Georgia	1,186.8	2,296.8	94%	New York	484.1	1,114.6	130%
Maryland	323.4	502.0	55%	Kentucky	1,352.7	1,998.9	48%	Kansas	2,105.1	4,818.4	129%
Massachusetts	118.8	184.5	55%	Colorado	1,049.1	1,728.2	65%	Rhode Island	9.4	20.7	120%
Michigan	866.5	2,330.9	169%	OKLAHOMA	848.4	1,629.6	92%	Montana	482.9	1,058.1	119%
Minnesota	2,179.9	6,078.0	179%	Idaho	773.6	1,524.5	97%	California	6,444.5	14,060.8	118%
Mississippi	582.1	1,518.9	161%	Mississippi	582.1	1,518.9	161%	South Carolina	350.8	755.8	115%
Missouri	1,364.0	3,519.5	158%	Oregon	998.5	1,440.7	44%	Pennsylvania	665.8	1,380.7	107%
Montana	482.9	1,058.1	119%	Pennsylvania	665.8	1,380.7	107%	Alabama	488.6	985.3	102%
Nebraska	2,530.5	6,584.1	160%	Tennessee	566.5	1,326.7	134%	Idaho	773.6	1,524.5	97%
Nevada	94.6	146.1	54%	Louisiana	555.9	1,290.9	132%	Washington	1,284.0	2,496.5	94%
New Hampshire	30.9	54.3	76%	Arizona	682.2	1,247.1	83%	Georgia	1,186.8	2,296.8	94%
New Jersey	216.1	415.7	92%	New York	484.1	1,114.6	130%	New Jersey	216.1	415.7	92%
New Mexico	434.7	775.9	78%	Montana	482.9	1,058.1	119%	OKLAHOMA	848.4	1,629.6	92%
New York	484.1	1,114.6	130%	Alabama	488.6	985.3	102%	North Carolina	1,630.2	3,065.5	88%
North Carolina	1,630.2	3,065.5	88%	Virginia	499.3	827.9	66%	Utah	193.2	354.7	84%
North Dakota	1,081.5	3,316.8	207%	New Mexico	434.7	775.9	78%	Arizona	682.2	1,247.1	83%
Ohio	1,468.2	3,456.5	135%	South Carolina	350.8	755.8	115%	New Mexico	434.7	775.9	78%
OKLAHOMA	848.4	1,629.6	92%	Maryland	323.4	502.0	55%	Delaware	129.5	230.5	78%
Oregon	998.5	1,440.7	44%	New Jersey	216.1	415.7	92%	West Virginia	58.1	103.3	78%
Pennsylvania	665.8	1,380.7	107%	Hawaii	150.5	380.8	153%	New Hampshire	30.9	54.3	76%
Rhode Island	9.4	20.7	120%	Utah	193.2	354.7	84%	Virginia	499.3	827.9	66%
South Carolina	350.8	755.8	115%	Wyoming	192.9	303.7	57%	Colorado	1,049.1	1,728.2	65%
South Dakota	1,232.5	3,209.6	160%	Delaware	129.5	230.5	78%	Wyoming	192.9	303.7	57%
Tennessee	566.5	1,326.7	134%	Connecticut	246.3	201.7	-18%	Massachusetts	118.8	184.5	55%
Texas	2,790.7	6,933.9	148%	Massachusetts	118.8	184.5	55%	Maryland	323.4	502.0	55%
Utah	193.2	354.7	84%	Maine	121.3	179.7	48%	Nevada	94.6	146.1	54%
Vermont	50.2	116.1	131%	Nevada	94.6	146.1	54%	Florida	1,661.4	2,553.6	54%
Virginia	499.3	827.9	66%	Vermont	50.2	116.1	131%	Maine	121.3	179.7	48%
Washington	1,284.0	2,496.5	94%	West Virginia	58.1	103.3	78%	Kentucky	1,352.7	1,998.9	48%
West Virginia	58.1	103.3	78%	New Hampshire	30.9	54.3	76%	Oregon	998.5	1,440.7	44%
Wisconsin	913.7	2,585.6	183%	Rhode Island	9.4	20.7	120%	Connecticut	246.3	201.7	-18%
Wyoming	192.9	303.7	57%	Alaska	21.9	12.4	-43%	Alaska	21.9	12.4	-43%
United States	51,265.5	115,815.1	126%	United States	51,265.5	115,815.1	126%	United States	51,265.5	115,815.1	126%



Agriculture: Productivity in Oklahoma?

Martha Gregory, Research Wizard, Tulsa City-County Library System

Producing More and Doing It Better Measuring Agricultural Productivity

Oklahoma as an agriculture state makes a substantial investment of money, materials and manpower into that sector of its economy. For this reason we need to know how well we are doing. Simple measures such as how much wheat we grow and how many head of cattle we raise do not tell all.

The USDA Economic Research Service (ERS) has a better way. Its productivity model measures output relative to inputs. The result is a productivity index that offsets production by the amount of investment for a truer picture of how efficient the nation and each of the states are at providing our food supply. An acre of wheat that requires excessive amounts of labor, land and material may be operating at a loss, regardless of how much is harvested.

Inputs are adjusted for changes in quality such as improvements in chemicals and seeds, changes in farm labor demographics, and innovations in agricultural equipment and methods. The result is agricultural productivity that is driven by innovation and improvements and backed by research, education, and solid infrastructure.

From the period 1948 to 2009, growth in the nation's farm sector output was due almost entirely to productivity growth measured by how well we use the resources we have. The level of U.S. farm output in 2009 was 170 percent above its level in 1948, growing at an average annual rate of 1.63 percent, while aggregate input use increased a mere 0.11 percent annually. Globally, productivity growth accounts for a rising share of the increase in true agricultural production and an easing of pressure on natural resources in order to supply the growing demand for food and agricultural commodities.

The table below shows productivity index growth for each of the states over the span of years from 1960-2004. Oklahoma's low ranking is due to consistently high inputs relative to how much it produced over those 40-plus years. Our productivity index has not kept up with the rest of the country. While variable weather extremes are a factor in our poor score, the data may suggest room for improvement in the key areas that support productivity growth – education, research, innovation and infrastructure.

According to the ERS, agriculture is more dependent on improvements in technology as a source of growth than are other sectors in the U.S. economy. This means that we must give at least as much attention to our investment and innovation in farming as we direct toward our other industries.

Agriculture Productivity Index 1960-2004

Source: USDA Economic Research Service

www.ers.usda.gov/data-products/agricultural-productivity-in-the-us.aspx

1	Oregon	2.58	25	California	1.66
2	Rhode Island	2.48	26	Vermont	1.62
3	Michigan	2.41	27	Missouri	1.62
4	Massachusetts	2.29	28	South Carolina	1.61
5	Indiana	2.28	29	Kentucky	1.61
6	Connecticut	2.20	30	Nebraska	1.60
7	Ohio	2.16	31	Wisconsin	1.59
8	Idaho	2.01	32	Utah	1.55
9	New Hampshire	2.00	33	Arizona	1.53
10	Mississippi	1.98	34	Virginia	1.53
11	Illinois	1.96	35	South Dakota	1.51
12	Arkansas	1.93	36	New York	1.48
13	Louisiana	1.93	37	New Mexico	1.44
14	Georgia	1.91	38	Florida	1.44
15	Maine	1.90	39	Montana	1.38
16	North Dakota	1.90	40	Alabama	1.32
17	Iowa	1.87	41	West Virginia	1.29
18	Minnesota	1.86	42	Nevada	1.24
19	North Carolina	1.84	43	Texas	1.14
20	Maryland	1.83	44	Tennessee	1.13
21	Pennsylvania	1.81	45	Colorado	1.10
22	Delaware	1.80	46	Kansas	1.05
23	Washington	1.73	47	Wyoming	0.66
24	New Jersey	1.67	48	OKLAHOMA	0.58



2009 Energy: Total Production

U.S. Energy Information Administration, in trillions of btu

STATE	FOSSIL FUELS			NUCLEAR	ALTERNATIVE			TOTAL
	Coal	NatGas	Oil		BioFuel	Other	TotAlt	
Texas	455.5	8,074.8	2,646.9	434.1	23.2	280.5	303.7	11,915.0
Wyoming	7,459.9	2,544.1	297.7	0.0	0.9	34.1	35.0	10,336.7
Louisiana	50.5	3,573.1	3,395.2	175.5	0.2	107.2	107.4	7,301.7
West Virginia	3,379.4	300.9	10.8	0.0	0.0	35.6	35.6	3,726.6
Kentucky	2,616.1	122.0	15.1	0.0	4.9	61.3	66.2	2,819.4
Pennsylvania	1,439.9	286.2	20.5	808.8	0.0	118.3	118.3	2,673.8
California	0.0	309.8	1,328.2	332.2	6.9	628.2	635.1	2,605.3
OKLAHOMA	18.3	2,086.3	388.7	0.0	0.0	77.2	77.2	2,570.5
Colorado	614.6	1,626.7	164.3	0.0	17.3	59.8	77.2	2,482.7
New Mexico	466.1	1,557.7	354.6	0.0	3.8	30.0	33.8	2,412.2
Illinois	783.3	1.5	52.8	998.7	177.7	61.8	239.5	2,075.7
Alaska	29.0	442.7	1,365.9	0.0	0.0	14.3	14.3	1,851.9
Alabama	459.5	451.8	42.0	415.4	0.0	263.7	263.7	1,632.6
Utah	502.6	475.9	133.0	0.0	0.0	17.1	17.1	1,128.6
Virginia	535.6	145.8	0.1	295.1	0.0	115.1	115.1	1,091.7
Montana	703.7	102.1	160.6	0.0	0.0	117.3	117.3	1,083.7
Ohio	670.2	92.5	33.8	159.1	36.5	59.8	96.2	1,051.7
North Dakota	391.8	80.4	462.5	0.0	36.1	46.4	82.5	1,017.1
Arkansas	0.1	691.1	33.5	158.7	0.0	120.5	120.5	1,003.9
Indiana	800.2	5.0	10.5	0.0	97.4	55.5	152.9	968.6
New York	0.0	45.8	2.0	454.8	6.9	400.7	407.7	910.3
Washington	0.0	0.0	0.0	69.4	0.0	826.3	826.3	895.7
Kansas	4.3	401.5	228.9	91.7	57.0	34.2	91.1	817.5
South Carolina	0.0	0.0	0.0	545.5	0.0	104.2	104.2	649.7
Iowa	0.0	0.0	0.0	48.9	431.2	108.5	539.7	588.6
North Carolina	0.0	0.0	0.0	427.3	0.0	148.0	148.0	575.3
Arizona	160.7	0.7	0.3	320.7	7.6	80.9	88.6	571.0
Michigan	0.0	160.3	34.2	228.6	29.8	111.0	140.8	563.8
Tennessee	50.3	5.6	1.6	282.0	23.7	160.8	184.5	524.1
Florida	0.0	0.3	4.0	304.6	0.0	214.6	214.6	523.4
Georgia	0.0	0.0	0.0	331.4	13.9	175.4	189.3	520.7
Mississippi	35.1	117.6	134.7	115.0	7.5	45.9	53.3	455.9
Oregon	0.0	0.8	0.0	0.0	8.0	402.3	410.3	411.2
Minnesota	0.0	0.0	0.0	129.6	132.0	125.0	257.0	386.6
New Jersey	0.0	0.0	0.0	359.1	0.0	22.5	22.5	381.6
Wisconsin	0.0	0.0	0.0	132.7	64.1	115.3	179.4	312.0
Nebraska	0.0	2.9	13.0	98.7	163.4	16.5	179.9	294.5
Maryland	53.4	0.0	0.0	152.2	0.0	42.5	42.5	248.2
Missouri	9.6	0.0	0.5	107.2	36.2	49.9	86.1	203.4
Connecticut	0.0	0.0	0.0	174.2	0.0	26.1	26.1	200.3
South Dakota	0.0	2.1	9.6	0.0	129.5	50.6	180.0	191.8
Idaho	0.0	0.0	0.0	0.0	1.7	138.2	139.9	139.9
Maine	0.0	0.0	0.0	0.0	0.0	139.7	139.7	139.7
New Hampshire	0.0	0.0	0.0	92.2	0.0	40.0	40.0	132.2
Massachusetts	0.0	0.0	0.0	56.4	0.0	42.1	42.1	98.5
Vermont	0.0	0.0	0.0	56.1	0.0	26.5	26.5	82.6
Nevada	0.0	0.0	2.6	0.0	0.0	47.3	47.3	49.9
Hawaii	0.0	0.0	0.0	0.0	0.0	16.4	16.4	16.4
Delaware	0.0	0.0	0.0	0.0	0.0	2.8	2.8	2.8
Rhode Island	0.0	0.0	0.0	0.0	0.0	2.7	2.7	2.7
United States	21,689.8	23,708.1	11,348.3	8,356.0	1,517.5	6,020.1	7,537.6	72,639.8



Fossil Fuel Energy

U.S. Energy Information Administration

	FOSSIL FUELS			NUCLEAR	ALTERNATIVE			
STATE	Coal	NatGas	Oil	Nuclear	BioFuel	Other	TotAlt	TOTAL
Texas	455.5	8,074.8	2,646.9	434.1	23.2	280.5	303.7	11,915.0
Wyoming	7,459.9	2,544.1	297.7	0.0	0.9	34.1	35.0	10,336.7
Louisiana	50.5	3,573.1	3,395.2	175.5	0.2	107.2	107.4	7,301.7
West Virginia	3,379.4	300.9	10.8	0.0	0.0	35.6	35.6	3,726.6
Kentucky	2,616.1	122.0	15.1	0.0	4.9	61.3	66.2	2,819.4
OKLAHOMA	18.3	2,086.3	388.7	0.0	0.0	77.2	77.2	2,570.5
Colorado	614.6	1,626.7	164.3	0.0	17.3	59.8	77.2	2,482.7
New Mexico	466.1	1,557.7	354.6	0.0	3.8	30.0	33.8	2,412.2
Alaska	29.0	442.7	1,365.9	0.0	0.0	14.3	14.3	1,851.9
Pennsylvania	1,439.9	286.2	20.5	808.8	0.0	118.3	118.3	2,673.8
California	0.0	309.8	1,328.2	332.2	6.9	628.2	635.1	2,605.3
Utah	502.6	475.9	133.0	0.0	0.0	17.1	17.1	1,128.6
Montana	703.7	102.1	160.6	0.0	0.0	117.3	117.3	1,083.7
Alabama	459.5	451.8	42.0	415.4	0.0	263.7	263.7	1,632.6
North Dakota	391.8	80.4	462.5	0.0	36.1	46.4	82.5	1,017.1
Illinois	783.3	1.5	52.8	998.7	177.7	61.8	239.5	2,075.7
Indiana	800.2	5.0	10.5	0.0	97.4	55.5	152.9	968.6
Ohio	670.2	92.5	33.8	159.1	36.5	59.8	96.2	1,051.7
Arkansas	0.1	691.1	33.5	158.7	0.0	120.5	120.5	1,003.9
Virginia	535.6	145.8	0.1	295.1	0.0	115.1	115.1	1,091.7
Kansas	4.3	401.5	228.9	91.7	57.0	34.2	91.1	817.5
Mississippi	35.1	117.6	134.7	115.0	7.5	45.9	53.3	455.9
Michigan	0.0	160.3	34.2	228.6	29.8	111.0	140.8	563.8
Arizona	160.7	0.7	0.3	320.7	7.6	80.9	88.6	571.0
Tennessee	50.3	5.6	1.6	282.0	23.7	160.8	184.5	524.1
Maryland	53.4		0.0	152.2	0.0	42.5	42.5	248.2
New York	0.0	45.8	2.0	454.8	6.9	400.7	407.7	910.3
Nebraska	0.0	2.9	13.0	98.7	163.4	16.5	179.9	294.5
South Dakota	0.0	2.1	9.6	0.0	129.5	50.6	180.0	191.8
Missouri	9.6	0.0	0.5	107.2	36.2	49.9	86.1	203.4
Florida	0.0	0.3	4.0	304.6	0.0	214.6	214.6	523.4
Nevada	0.0		2.6	0.0	0.0	47.3	47.3	49.9
Oregon	0.0	0.8	0.0	0.0	8.0	402.3	410.3	411.2
Washington	0.0	0.0	0.0	69.4	0.0	826.3	826.3	895.7
South Carolina	0.0	0.0	0.0	545.5	0.0	104.2	104.2	649.7
Iowa	0.0	0.0	0.0	48.9	431.2	108.5	539.7	588.6
North Carolina	0.0	0.0	0.0	427.3	0.0	148.0	148.0	575.3
Georgia	0.0	0.0	0.0	331.4	13.9	175.4	189.3	520.7
Minnesota	0.0	0.0	0.0	129.6	132.0	125.0	257.0	386.6
New Jersey	0.0	0.0	0.0	359.1	0.0	22.5	22.5	381.6
Wisconsin	0.0	0.0	0.0	132.7	64.1	115.3	179.4	312.0
Connecticut	0.0	0.0	0.0	174.2	0.0	26.1	26.1	200.3
Idaho	0.0	0.0	0.0	0.0	1.7	138.2	139.9	139.9
Maine	0.0	0.0	0.0	0.0	0.0	139.7	139.7	139.7
New Hampshire	0.0	0.0	0.0	92.2	0.0	40.0	40.0	132.2
Massachusetts	0.0	0.0	0.0	56.4	0.0	42.1	42.1	98.5
Vermont	0.0	0.0	0.0	56.1	0.0	26.5	26.5	82.6
Hawaii	0.0	0.0	0.0	0.0	0.0	16.4	16.4	16.4
Delaware	0.0	0.0	0.0	0.0	0.0	2.8	2.8	2.8
Rhode Island	0.0	0.0	0.0	0.0	0.0	2.7	2.7	2.7
United States	21,689.8	23,708.1	11,348.3	8,356.0	1,517.5	6,020.1	7,537.6	72,639.8



Nuclear Energy

U.S. Energy Information Administration

STATE	FOSSIL FUELS			NUCLEAR	ALTERNATIVE			TOTAL
	Coal	NatGas	Oil	Nuclear	BioFuel	Other	TotAlt	
Illinois	783.3	1.5	52.8	998.7	177.7	61.8	239.5	2,075.7
Pennsylvania	1,439.9	286.2	20.5	808.8	0.0	118.3	118.3	2,673.8
South Carolina	0.0	0.0	0.0	545.5	0.0	104.2	104.2	649.7
New York	0.0	45.8	2.0	454.8	6.9	400.7	407.7	910.3
Texas	455.5	8,074.8	2,646.9	434.1	23.2	280.5	303.7	11,915.0
North Carolina	0.0	0.0	0.0	427.3	0.0	148.0	148.0	575.3
Alabama	459.5	451.8	42.0	415.4	0.0	263.7	263.7	1,632.6
New Jersey	0.0	0.0	0.0	359.1	0.0	22.5	22.5	381.6
California	0.0	309.8	1,328.2	332.2	6.9	628.2	635.1	2,605.3
Georgia	0.0	0.0	0.0	331.4	13.9	175.4	189.3	520.7
Arizona	160.7	0.7	0.3	320.7	7.6	80.9	88.6	571.0
Florida	0.0	0.3	4.0	304.6	0.0	214.6	214.6	523.4
Virginia	535.6	145.8	0.1	295.1	0.0	115.1	115.1	1,091.7
Tennessee	50.3	5.6	1.6	282.0	23.7	160.8	184.5	524.1
Michigan	0.0	160.3	34.2	228.6	29.8	111.0	140.8	563.8
Louisiana	50.5	3,573.1	3,395.2	175.5	0.2	107.2	107.4	7,301.7
Connecticut	0.0	0.0	0.0	174.2	0.0	26.1	26.1	200.3
Ohio	670.2	92.5	33.8	159.1	36.5	59.8	96.2	1,051.7
Arkansas	0.1	691.1	33.5	158.7	0.0	120.5	120.5	1,003.9
Maryland	53.4	(s)	0.0	152.2	0.0	42.5	42.5	248.2
Wisconsin	0.0	0.0	0.0	132.7	64.1	115.3	179.4	312.0
Minnesota	0.0	0.0	0.0	129.6	132.0	125.0	257.0	386.6
Mississippi	35.1	117.6	134.7	115.0	7.5	45.9	53.3	455.9
Missouri	9.6	0.0	0.5	107.2	36.2	49.9	86.1	203.4
Nebraska	0.0	2.9	13.0	98.7	163.4	16.5	179.9	294.5
New Hampshire	0.0	0.0	0.0	92.2	0.0	40.0	40.0	132.2
Kansas	4.3	401.5	228.9	91.7	57.0	34.2	91.1	817.5
Washington	0.0	0.0	0.0	69.4	0.0	826.3	826.3	895.7
Massachusetts	0.0	0.0	0.0	56.4	0.0	42.1	42.1	98.5
Vermont	0.0	0.0	0.0	56.1	0.0	26.5	26.5	82.6
Iowa	0.0	0.0	0.0	48.9	431.2	108.5	539.7	588.6
South Dakota	0.0	2.1	9.6	0.0	129.5	50.6	180.0	191.8
Indiana	800.2	5.0	10.5	0.0	97.4	55.5	152.9	968.6
North Dakota	391.8	80.4	462.5	0.0	36.1	46.4	82.5	1,017.1
Colorado	614.6	1,626.7	164.3	0.0	17.3	59.8	77.2	2,482.7
Oregon	0.0	0.8	0.0	0.0	8.0	402.3	410.3	411.2
Kentucky	2,616.1	122.0	15.1	0.0	4.9	61.3	66.2	2,819.4
New Mexico	466.1	1,557.7	354.6	0.0	3.8	30.0	33.8	2,412.2
Idaho	0.0	0.0	0.0	0.0	1.7	138.2	139.9	139.9
Wyoming	7,459.9	2,544.1	297.7	0.0	0.9	34.1	35.0	10,336.7
West Virginia	3,379.4	300.9	10.8	0.0	0.0	35.6	35.6	3,726.6
OKLAHOMA	18.3	2,086.3	388.7	0.0	0.0	77.2	77.2	2,570.5
Alaska	29.0	442.7	1,365.9	0.0	0.0	14.3	14.3	1,851.9
Utah	502.6	475.9	133.0	0.0	0.0	17.1	17.1	1,128.6
Montana	703.7	102.1	160.6	0.0	0.0	117.3	117.3	1,083.7
Maine	0.0	0.0	0.0	0.0	0.0	139.7	139.7	139.7
Nevada	0.0	(s)	2.6	0.0	0.0	47.3	47.3	49.9
Hawaii	0.0	0.0	0.0	0.0	0.0	16.4	16.4	16.4
Delaware	0.0	0.0	0.0	0.0	0.0	2.8	2.8	2.8
Rhode Island	0.0	0.0	0.0	0.0	0.0	2.7	2.7	2.7
United States	21,689.8	23,708.1	11,348.3	8,356.0	1,517.5	6,020.1	7,537.6	72,639.8



Alternative Energy

U.S. Energy Information Administration

STATE	FOSSIL FUELS			NUCLEAR	ALTERNATIVE			TOTAL
	Coal	NatGas	Oil		BioFuel	Other	TotAlt	
Washington	0.0	0.0	0.0	69.4	0.0	826.3	826.3	895.7
California	0.0	309.8	1,328.2	332.2	6.9	628.2	635.1	2,605.3
Iowa	0.0	0.0	0.0	48.9	431.2	108.5	539.7	588.6
Oregon	0.0	0.8	0.0	0.0	8.0	402.3	410.3	411.2
New York	0.0	45.8	2.0	454.8	6.9	400.7	407.7	910.3
Texas	455.5	8,074.8	2,646.9	434.1	23.2	280.5	303.7	11,915.0
Alabama	459.5	451.8	42.0	415.4	0.0	263.7	263.7	1,632.6
Minnesota	0.0	0.0	0.0	129.6	132.0	125.0	257.0	386.6
Illinois	783.3	1.5	52.8	998.7	177.7	61.8	239.5	2,075.7
Florida	0.0	0.3	4.0	304.6	0.0	214.6	214.6	523.4
Georgia	0.0	0.0	0.0	331.4	13.9	175.4	189.3	520.7
Tennessee	50.3	5.6	1.6	282.0	23.7	160.8	184.5	524.1
South Dakota	0.0	2.1	9.6	0.0	129.5	50.6	180.0	191.8
Nebraska	0.0	2.9	13.0	98.7	163.4	16.5	179.9	294.5
Wisconsin	0.0	0.0	0.0	132.7	64.1	115.3	179.4	312.0
Indiana	800.2	5.0	10.5	0.0	97.4	55.5	152.9	968.6
North Carolina	0.0	0.0	0.0	427.3	0.0	148.0	148.0	575.3
Michigan	0.0	160.3	34.2	228.6	29.8	111.0	140.8	563.8
Idaho	0.0	0.0	0.0	0.0	1.7	138.2	139.9	139.9
Maine	0.0	0.0	0.0	0.0	0.0	139.7	139.7	139.7
Arkansas	0.1	691.1	33.5	158.7	0.0	120.5	120.5	1,003.9
Pennsylvania	1,439.9	286.2	20.5	808.8	0.0	118.3	118.3	2,673.8
Montana	703.7	102.1	160.6	0.0	0.0	117.3	117.3	1,083.7
Virginia	535.6	145.8	0.1	295.1	0.0	115.1	115.1	1,091.7
Louisiana	50.5	3,573.1	3,395.2	175.5	0.2	107.2	107.4	7,301.7
South Carolina	0.0	0.0	0.0	545.5	0.0	104.2	104.2	649.7
Ohio	670.2	92.5	33.8	159.1	36.5	59.8	96.2	1,051.7
Kansas	4.3	401.5	228.9	91.7	57.0	34.2	91.1	817.5
Arizona	160.7	0.7	0.3	320.7	7.6	80.9	88.6	571.0
Missouri	9.6	0.0	0.5	107.2	36.2	49.9	86.1	203.4
North Dakota	391.8	80.4	462.5	0.0	36.1	46.4	82.5	1,017.1
Colorado	614.6	1,626.7	164.3	0.0	17.3	59.8	77.2	2,482.7
OKLAHOMA	18.3	2,086.3	388.7	0.0	0.0	77.2	77.2	2,570.5
Kentucky	2,616.1	122.0	15.1	0.0	4.9	61.3	66.2	2,819.4
Mississippi	35.1	117.6	134.7	115.0	7.5	45.9	53.3	455.9
Nevada	0.0	(s)	2.6	0.0	0.0	47.3	47.3	49.9
Maryland	53.4	(s)	0.0	152.2	0.0	42.5	42.5	248.2
Massachusetts	0.0	0.0	0.0	56.4	0.0	42.1	42.1	98.5
New Hampshire	0.0	0.0	0.0	92.2	0.0	40.0	40.0	132.2
West Virginia	3,379.4	300.9	10.8	0.0	0.0	35.6	35.6	3,726.6
Wyoming	7,459.9	2,544.1	297.7	0.0	0.9	34.1	35.0	10,336.7
New Mexico	466.1	1,557.7	354.6	0.0	3.8	30.0	33.8	2,412.2
Vermont	0.0	0.0	0.0	56.1	0.0	26.5	26.5	82.6
Connecticut	0.0	0.0	0.0	174.2	0.0	26.1	26.1	200.3
New Jersey	0.0	0.0	0.0	359.1	0.0	22.5	22.5	381.6
Utah	502.6	475.9	133.0	0.0	0.0	17.1	17.1	1,128.6
Hawaii	0.0	0.0	0.0	0.0	0.0	16.4	16.4	16.4
Alaska	29.0	442.7	1,365.9	0.0	0.0	14.3	14.3	1,851.9
Delaware	0.0	0.0	0.0	0.0	0.0	2.8	2.8	2.8
Rhode Island	0.0	0.0	0.0	0.0	0.0	2.7	2.7	2.7
United States	21,689.8	23,708.1	11,348.3	8,356.0	1,517.5	6,020.1	7,537.6	72,639.8



Mathematics: International Rankings

Paul E. Peterson, et al, Globally Challenged? August 2011, Harvard University

	STATE	PCT ¹	OVER ²	UNDER ³
1	Massachusetts	50.7	Switzerland	Japan
2	Minnesota	43.1	Australia	Estonia
3	Vermont	41.4	Australia	Estonia
4	North Dakota	41.1	Estonia	Iceland
5	New Jersey	40.4	Iceland	France
6	Kansas	40.2	Iceland	France
7	South Dakota	39.1	Iceland	France
8	Pennsylvania	38.3	Denmark	Austria
9	New Hampshire	37.9	Denmark	Austria
10	Montana	37.6	Austria	Slovakia
11	Virginia	37.5	Austria	Slovakia
12	Colorado	37.4	Austria	Slovakia
13	Wisconsin	37.0	Austria	Slovakia
14	Maryland	36.5	Austria	Slovakia
15	Wyoming	36.0	Slovakia	Norway
16	Washington	35.9	Slovakia	Norway
17	Ohio	35.4	Sweden	Luxembourg
18	Iowa	35.2	Luxembourg	Poland
19	Indiana	35.1	Luxembourg	Poland
20	Oregon	34.8	Luxembourg	Poland
21	Connecticut	34.7	Luxembourg	Poland
22	Texas	34.7	Poland	Hungary
23	Nebraska	34.6	Poland	Hungary
24	North Carolina	34.5	Poland	Hungary
25	Maine	34.1	Hungary	Czech Republic
26	Idaho	34.1	Czech Republic	U.K.
27	Utah	32.4	Portugal	Ireland
28	Alaska	32.2	Portugal	Ireland
	US Average	32.2	Portugal	Ireland
29	South Carolina	31.9	Ireland	Italy
30	Delaware	31.3	Ireland	Italy
31	Illinois	30.8	Spain	Latvia
32	New York	30.2	Spain	Latvia
33	Missouri	29.9	Spain	Latvia
34	Michigan	28.9	Spain	Latvia
35	Rhode Island	27.7	Spain	Latvia
36	Florida	27.4	Latvia	Lithuania
37	Kentucky	27.3	Lithuania	Greece
38	Arizona	26.3	Lithuania	Greece
39	Georgia	24.7	Lithuania	Greece
40	Arkansas	24.4	Lithuania	Greece
41	California	23.9	Lithuania	Greece
42	Tennessee	23.1	Greece	Dubai
43	Nevada	23.0	Greece	Dubai
44	OKLAHOMA	21.3	Croatia	Turkey
45	Hawaii	21.2	Croatia	Turkey
46	Louisiana	19.0	Croatia	Turkey
47	West Virginia	18.5	Croatia	Turkey
48	Alabama	18.2	Turkey	Serbia
49	New Mexico	17.4	Turkey	Serbia
50	Mississippi	13.6	Bulgaria	Uruguay
51	DC	8.0	Thailand	Mexico



By Nation

1	Shanghai	27	Poland
2	Singapore	28	Hungary
3	Hong Kong	29	Czech Republic
4	Korea	30	U.K.
5	Finland	31	Portugal
6	Taiwan	32	United States
7	Liechtenstein	33	Ireland
8	Switzerland	34	Italy
9	Japan	35	Spain
10	Canada	36	Latvia
11	Netherlands	37	Lithuania
12	Macao	38	Greece
13	Belgium	39	Dubai
14	New Zealand	40	Russia
15	Germany	41	Israel
16	Australia	42	Croatia
17	Estonia		OKLAHOMA
18	Iceland	43	Turkey
19	France	44	Serbia
20	Slovenia	45	Bulgaria
21	Denmark	46	Uruguay
22	Austria	47	Trinidad and Tobago
23	Slovakia	48	Romania
24	Norway	49	Chile
25	Sweden	50	Thailand
26	Luxembourg		

1 - Percentage of students "proficient" in mathematics; 2 - Nearest country outperforming United States; 3 - Nearest country outperformed by the United States.
Source: Globally Challenged: Are U.S. Students Ready to Compete? The Latest on Each State's International Standing in Math and Reading. August 2011. Harvard University



Trust for America's Health and Centers for Disease Control

Too Much Sitting - Too Many Calories



ADULT OBESITY GROWTH RANKS SINCE 1995

Note: 1 = Fastest rate of growth in adult obesity, 51 = lowest rate of growth in adult obesity. Data for this analysis was obtained from the Behavioral Risk Factor Surveillance System (BRFSS) dataset (publicly available on the web at www.cdc.gov/brfss).

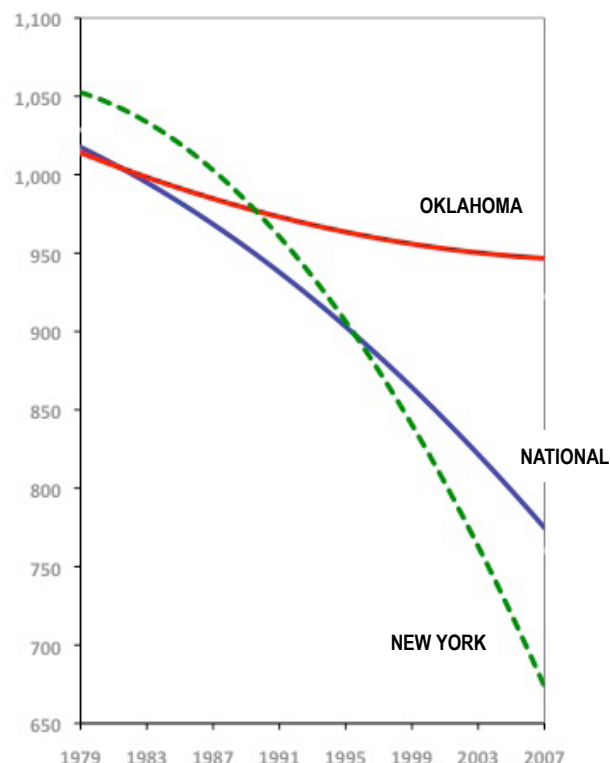
1. **Oklahoma**; 2. Alabama; 3. Tennessee; 4. Kansas; 5. Mississippi; 6. (tie) Georgia; and Kentucky; 8. (tie) Louisiana; and West Virginia; 10. South Carolina; 11. South Dakota; 12. (tie) New Mexico; and Texas; 14. Arkansas; 15. Ohio; 16. Missouri; 17. Michigan; 18. North Carolina; 19. (tie) Arizona; Delaware; and North Dakota; 22. New Hampshire; 23. (tie) Hawaii; and Washington; 25. (tie) Illinois and Nebraska; 27. Pennsylvania; 28. Maine; 29. Maryland; 30. Nevada; 31. Iowa; 32. (tie) Florida; New Jersey; and Oregon; 35. Virginia; 36. (tie) Idaho; and Rhode Island; 38. Wyoming; 39. Utah; 40. Wisconsin; 41. California 42. (tie) Indiana; and Montana; 44. (tie) Massachusetts; and Minnesota; 46. New York; 47. Alaska; 48. Vermont; 49. Connecticut; 50. Colorado; 51. District of Columbia. Copyright © 2012 Trust for America's Health <http://healthamericans.org/states>

Some Poor Metrics in Oklahoma

Rank of 1 is worst: 50 is best

Fruit and Vegetable Intake, Adults (2005-2009 avg)	1	15.5%
Adult Physical Inactivity (2008-10 avg)	3	30.9%
Fruit and Vegetable Intake, % Students (2009)	6	14.8%
Hypertension Rates, % Adults (2005-09 avg)	6	31.9%
Diabetes Rates, % Adults (2008-10 avg)	6	10.5%
Obesity Rates, % Adults (2008-10 avg)	7	31.4%
Percent Exclusive Breastfeeding at 6 Months	15	11.9%
Obesity Rates, % Children (2007)	17	16.4%
Obesity Rates, % High School Students (2009)	N/A	14.1%

Premature Death in Oklahoma



STATE-BY-STATE PREMATURE DEATH RATES SINCE 1979

The age-adjusted death rate is a fundamental health care metric. It measures the extent to which groups of people die prematurely. The AADR is very much driven by heart disease - and Oklahoma has the highest rates of heart disease in America. The higher the number the worse the rate.

The ideal trend line is down. The chart above shows improvement since 1979. The national trendline is in blue; the most improved state (New York) is in green. **The least improved state has been Oklahoma - shown in red.** (Source: CDC, Atlanta)

You will see that in 1979 the was at the national average and much below New York. Things have changed - starting in the early 1990's. Reasons? All the above but certainly led by the after-shock of the Oil Bust of the 1980's.

In truth, the Oklahoma of today is quite different collection of people than in 1979. That is the logical result of significant in and out migration - and the movement of corporate headquarters.

Health: Diagnosis of Cognitive Dissonance

Michael Lapolla, Oklahoma Academy Research Group, Tulsa

Why is this essay stuck in the middle of data tables? It's because the author decided to disagree with the "conventional wisdom" – and perhaps to point out some elephants in the living room. This entire subject is worthy of a thesis or dissertation. I only have two pages so a lot will be left out. As always, please feel free to disagree.

I was asked to provide relevant international health data and statistics for this book and Town Hall. I reflexively agreed knowing that there is a certain amount of data always available. Then it occurred to me that so much of the data and inferences are misleading. A mentor once told me "this is like counting telephone poles. Even if you get the right number – so what?" I think the same applies to cross-cultural international health data. So I decided to offer you a different conversation.

What passes for international comparisons rarely gets past the twin observations of dollars spent versus lifespans. What passes for thoughtful analysis says "we spend more than anyone else, and our lifespans are not longer than other countries and other countries have government dominated national schemes therefore we need to have a government dominated system in the United States." Then presumably we will have longer lifespans? This is pseudo intellectual rubbish. And the Jesuits would be ashamed of the reasoning and logic!

I was struck with some information that surprised me. Japan reports the longest average lifespans in the world - 82 years. But if you measured the Japanese population in every state in the United States – EVERY state would exceed the average of Japan. Let's examine some reasons why.

Health (Medical) Care Expense

The United States spends more than any other country on health care. That's horrible and wasteful. Right? Well, yes we do spend a lot. We also probably spend more on education,

information technology, synthetic motor oil, Ethiopian restaurants, snowmobiles, fishing rods, chicken fried steak, and automobiles. That seems to be what wealthier and more productive nations do – they spend more money than less wealthy nations.

Health (Medical) Care System Purpose

But let's go a step further. A primary purpose of a health care system is to treat illness and restore productivity. Have you ever thought what country – and what workers – are the most productive in the world? They are in the United States ... and are American workers. Have you thought that perhaps this (maintained and restored) productivity is the result of higher health care and medical care expenditures. Have we thought that perhaps additional spending is the cost of increased productivity – and thus greater wealth? And to take it another step further, how can the United States afford to subsidize so many other countries to whom we are compared? Perhaps it is via this additional productivity.

Cognitive Dissonance

"People tend to seek consistency in their beliefs and perceptions. So what happens when one of our beliefs conflicts with another previously held belief? The term "cognitive dissonance" is used to describe the feeling of discomfort that results from holding two conflicting beliefs. When there is a discrepancy between beliefs and behaviors, something must change in order to eliminate or reduce the dissonance." (psychology.about.com)

If we are spending so much on health care, why are American lifespans in many other countries longer than ours? The assertion presumes a direct cause and effect. This assertion also practices a form of cognitive dissonance. This is a crucial point. On one hand we confidently assert that the "determinants of health" are many – and that medical care itself will determine about 10% of one's longevity (see embedded chart). Other factors



(genetics, environment, personal behaviors and public policy) will determine 90%. Then we turn around and demand additional spending on MEDICAL care to lengthen lifespan to the exclusion of modifying other determinants.

So believing one thing while doing another - is called cognitive dissonance. It is a form of irrationality.

So perhaps our lifespans are shorter because of personal behaviors, individual choices, poor environments both family and community – and the effects of the collisions of hundreds of subcultures.

“Efficient” Systems?

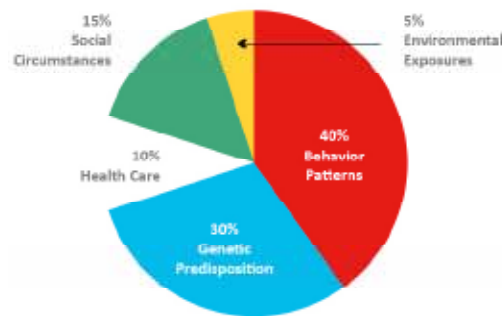
If we are spending so much on health care, and American lifespans are shorter than other countries, then we must have an inefficient system.

Huh? Health care is a very labor intensive endeavor. Regardless of hi-tech machinery, much of health care expense is paying for labor. And frankly, much of the high tech expense is to pay labor for creating and maintaining it.

Therefore we are tempted to say – “these doctors are making a fortune” etc etc blah blah. Well do you know what? Our health care administrators, technicians, and everyone else employed in health care do very well also, especially when compared to those in other countries.

Yes our physicians could be the best compensated in the world. But guess what? So are our nurses, lab techs and almost everyone in the health care sector. Additionally tort claims bar lawyers are probably the best compensated in the world also – as are our politicians, fireman, policeman, car dealers, plumbers, UAW members and probably dog catchers. You get this when you are the most productive nation on earth.

CONTRIBUTIONS TO LONGEVITY



New England Journal of Medicine Volume 357, No. 12, S. Schroeder

The truth is most workers in America do quite well compared to their foreign counterparts in ALL fields including government service. Perhaps that is why so many want to move here? Perhaps that is why we can spend more on health care services? So yes – we can somehow cut physician pay in half. And what is the unintended consequence of that? Perhaps Atlas will shrug.

All of the countries that seem to be more “efficient” than us have forms of government operated health care systems. Ergo, if we want to be more efficient we need a government operated system. If we wanted to be the most “efficient” - that is spend the least per year of lifespan - and have a government operated system, then I have an idea. We should emulate the Philippines, Vietnam, Thailand and every South American country. Any takers? Why not? And finally, we know that the costs vs. lifespan vary significantly even within Europe.

Summary

It appears that we will have expenditures that are an estimated 30% higher than some European countries. Is all of that extra expense waste? I would not consider the restoration and maintenance of the world’s most productive workforce a waste. I would not consider well paying jobs in a highly skilled professions to be a waste either. Nor would I consider being the world’s leader in research and innovation a waste. But they do have a cost.

Let’s stop practicing cognitive dissonance. Let’s quit beating up on the health care sector; and start helping to clarify the marketplace and help by solving real problems - not “bogeymen”. And finally, perhaps we need to start applying this new found passion for efficiencies to many other areas of our society to include education, military procurement, road building, the legal system - and heaven forbid - too many federal agencies.



Passports: Issued Per Capita by State, 2011

Source: travel.state.gov

	State	FY 2011	2011 POP	PER 100K	AVG
1	DISTRICT OF COLUMBIA	155,947	601,723	25,917	729%
2	MASSACHUSETTS	333,636	6,547,629	5,096	143%
3	NEW JERSEY	446,964	8,791,894	5,084	143%
4	NEW YORK	923,888	19,378,102	4,768	134%
5	ALASKA	33,587	710,231	4,729	133%
6	CONNECTICUT	162,544	3,574,097	4,548	128%
7	MARYLAND	249,232	5,773,552	4,317	121%
8	CALIFORNIA	1,600,966	37,253,956	4,297	121%
9	NEW HAMPSHIRE	54,922	1,316,470	4,172	117%
10	FLORIDA	768,267	18,801,310	4,086	115%
11	WASHINGTON	271,283	6,724,540	4,034	113%
12	COLORADO	200,567	5,029,196	3,988	112%
13	HAWAII	53,993	1,360,301	3,969	112%
14	RHODE ISLAND	41,771	1,052,567	3,968	112%
15	VIRGINIA	316,172	8,001,024	3,952	111%
16	SOUTH CAROLINA	178,371	4,625,364	3,856	108%
17	MINNESOTA	203,012	5,303,925	3,828	108%
18	VERMONT	23,819	625,741	3,807	107%
19	ILLINOIS	481,337	12,830,632	3,751	105%
	UNITED STATES	10,980,119	308,748,481	3,556	100%
20	MAINE	47,138	1,328,361	3,549	100%
21	OREGON	135,528	3,831,074	3,538	99%
22	UTAH	96,849	2,763,885	3,504	99%
23	DELAWARE	31,051	900,877	3,447	97%
24	NORTH DAKOTA	22,750	672,591	3,382	95%
25	PENNSYLVANIA	419,980	12,702,379	3,306	93%
26	NEVADA	88,286	2,700,551	3,269	92%
27	TEXAS	800,648	25,145,561	3,184	90%
28	GEORGIA	304,020	9,687,653	3,138	88%
29	MONTANA	30,939	989,415	3,127	88%
30	ARIZONA	196,629	6,392,017	3,076	87%
31	WISCONSIN	168,937	5,686,986	2,971	84%
32	WYOMING	16,445	563,626	2,918	82%
33	NEBRASKA	52,502	1,826,341	2,875	81%
34	IOWA	87,077	3,046,355	2,858	80%
35	KANSAS	81,013	2,853,118	2,839	80%
36	IDAHO	44,255	1,567,582	2,823	79%
37	MICHIGAN	270,717	9,883,640	2,739	77%
38	NORTH CAROLINA	255,548	9,535,483	2,680	75%
39	SOUTH DAKOTA	21,642	814,180	2,658	75%
40	OHIO	301,845	11,536,504	2,616	74%
41	MISSOURI	154,174	5,988,927	2,574	72%
42	INDIANA	159,456	6,483,802	2,459	69%
43	NEW MEXICO	47,476	2,059,179	2,306	65%
44	OKLAHOMA	86,289	3,751,351	2,300	65%
45	TENNESSEE	144,539	6,346,105	2,278	64%
46	LOUISIANA	97,497	4,533,372	2,151	60%
47	ALABAMA	99,122	4,779,736	2,074	58%
48	KENTUCKY	85,426	4,339,367	1,969	55%
49	ARKANSAS	56,071	2,915,918	1,923	54%
50	WEST VIRGINIA	30,156	1,852,994	1,627	46%
51	MISSISSIPPI	45,836	2,967,297	1,545	43%

“Travel is fatal to prejudice, bigotry, and narrow-mindedness.” - Mark Twain



Discussion

A US passport is one of the most important documents an American citizen can possess, especially if he or she plans to travel abroad. Since the inauguration of the Western Hemisphere Travel Initiative, a valid passport has been required for all Americans to exit and return to the United States, independent of age.

A passport is now required for travel to Mexico, Canada, Bermuda and the Caribbean region. Passport cards serve that purpose.

In 2011, there were 86,289 active passports issued within Oklahoma.

This is a rate of 2,300 active passport holders per 100,000 population. This rate is 2/3 of the national average and ranks Oklahoma 44th in the nation.

Each state below Oklahoma is a traditionally “southern” state.

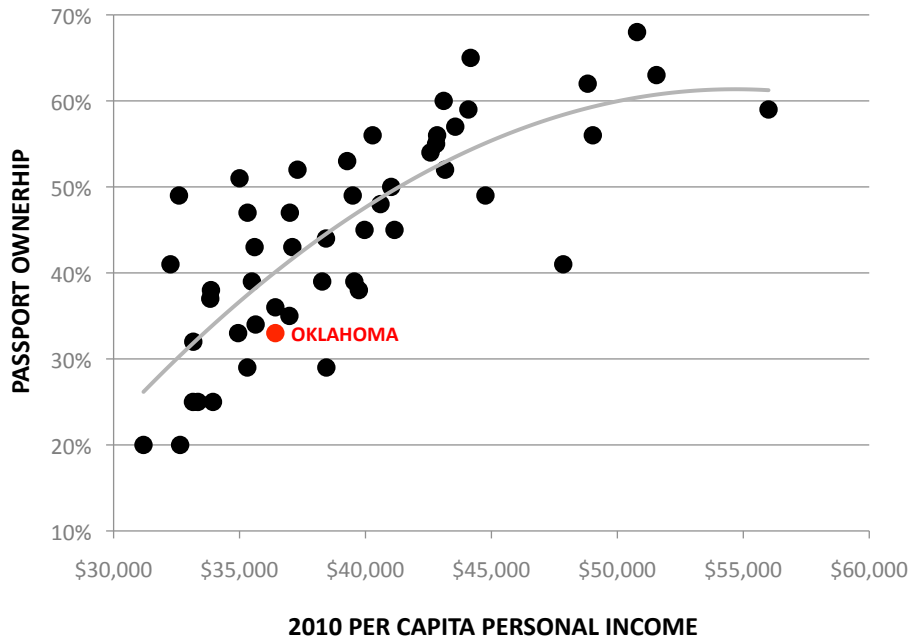
During the period of 2007-11, the rate of passport holders in the nation dropped 38% (17.8m to 11m) - with Oklahoma dropping 40% (from 146,000 to 86,000).



Passports: Ownership and Income

Bureau of Labor Statistics and cpggrey.squarespace.com

STATE	PCPI	PASS	STATE	PCPI	PASS
1 New Jersey	\$50,781	68%	26 Pennsylvania	\$41,152	45%
2 Alaska	\$44,174	65%	27 Wisconsin	\$38,432	44%
3 Massachusetts	\$51,552	63%	28 Michigan	\$35,597	43%
4 New York	\$48,821	62%	29 Oregon	\$37,095	43%
5 California	\$43,104	60%	30 Idaho	\$32,257	41%
6 Connecticut	\$56,001	59%	31 Wyoming	\$47,851	41%
7 New Hampshire	\$44,084	59%	32 Georgia	\$35,490	39%
8 Washington	\$43,564	57%	33 Iowa	\$38,281	39%
9 Maryland	\$49,025	56%	34 Nebraska	\$39,557	39%
10 Minnesota	\$42,843	56%	35 Kansas	\$39,737	38%
11 Vermont	\$40,283	56%	36 South Dakota	\$33,865	38%
12 Colorado	\$42,802	55%	37 New Mexico	\$33,837	37%
13 Rhode Island	\$42,579	54%	38 Ohio	\$36,421	36%
14 Florida	\$39,272	53%	39 Missouri	\$36,979	35%
15 Illinois	\$43,159	52%	40 North Carolina	\$35,638	34%
16 Maine	\$37,300	52%	41 Indiana	\$34,943	33%
17 Arizona	\$34,999	51%	42 OKLAHOMA	\$36,421	33%
18 Hawaii	\$41,021	50%	43 South Carolina	\$33,163	32%
19 Texas	\$39,493	49%	44 Louisiana	\$38,446	29%
20 Utah	\$32,595	49%	45 Tennessee	\$35,307	29%
21 Virginia	\$44,762	49%	46 Alabama	\$33,945	25%
22 North Dakota	\$40,596	48%	47 Arkansas	\$33,150	25%
23 Montana	\$35,317	47%	48 Kentucky	\$33,348	25%
24 Nevada	\$36,997	47%	49 Mississippi	\$31,186	20%
25 Delaware	\$39,962	45%	50 West Virginia	\$32,641	20%



Language: Spoken at Home in Oklahoma

Source: 2010 American Community Survey (ACS)

Population 5 years and over..... 3,497,798

PRIMARY LANGUAGE

Speak only English 90.9%

Speak a language other than English..... 9.1%

Spanish or Spanish Creole 6.1%

Other Indo-European languages 1.0%

Asian and Pacific Island languages 1.4%

Other languages 0.7%

LANGUAGE OTHER THAN ENGLISH

Spanish or Spanish Creole - Total 213,194

5-17 years..... 53,828

18-64 years 151,833

65 years and over 7,533

Asian and Pacific Island 48,839

5-17 years..... 8,613

18-64 years..... 35,374

65 years and over..... 4,852

Other Indo-European - Total 33,909

5-17 years..... 3,309

18-64 years..... 25,106

65 years and over 5,494

Other languages 23,613

5-17 years..... 3,553

18-64 years..... 17,329

65 years and over..... 2,731

GRAND TOTAL OTHER LANGUAGES 319,555

5-17 years..... 69,303

18-64 years..... 229,642

65 years and over 20,610

The Pope spoke to the world this morning in three languages and we didn't understand a one of 'em. Will Rogers



Discussion

More than 90% of Oklahomans speak English in their home as the primary language. An estimated 9% speak a language other than English.

Of the almost 320,000 who speak a language other than English, about two-thirds speak Spanish, and the remaining third will speak Asian, Indo-European or other languages.

In every language category, about 72% of non-English speakers are adults between 18-64.

However in the Spanish language cohort, 25% (53,828/213,194) of the non-English speakers are children. That ratio is much higher than in other groups. This number of primarily Spanish speaking children undoubtedly places burdens on both schools and entry level employers.

Source: 2010 American Community Survey (ACS)



Section 3

Behaving Globally



The World Is Already Here!

James C. Collard, PhD, Oklahoma Academy Research Group, Shawnee

Did you ever stop to think about how many Oklahoma residents were not born in the United States? Do you know how many foreign owned businesses there are in our state? Do they impact our economy in a big way or do they not really matter that much? And what about the number of international students at our colleges and universities?



how we make our decisions, who we vote for, and how we train our children.

So let's break this down further: of the Europeans, the largest majority comes from Northern and Western Europe with England and Germany

leading the way. However, approximately 20% comes from Eastern Europe with the largest of these numbers from Russia, Ukraine, and Czechoslovakia. Asia accounts for 25% with Vietnam, India and China as the three largest countries; but there are also significant numbers from the Philippines and the other SE Asian countries.

As we begin to discuss what it means to engage in the global marketplace isn't it important to at least acknowledge the contributions our fellow citizens from other countries are making in our business community and indeed in our daily lives?

Terrorism and immigration dominate our nation and state's news casts; but other than these issues, it seems that many Oklahomans never really give much thought to international issues. It simply doesn't rank very highly on our list of priorities. Sure the economic mess in Europe is troubling, but it is also hard to get a handle on. Does it really matter if Greece stays in the European Union? Oh, and the ethnic festivals are kind of fun, especially the food; but what about the people behind the festivals and food? Who are they really?

According to the most recent data, there are currently nearly 200,000 foreign born residents of Oklahoma.

Of these 8% are from Europe, 25% are from Asia, 59.7% are from Latin America, 4.1% are from Africa, and 1% are from Oceania. The reason this statistic is important is that where we are born determines to at least some extent our perspective on how things should work.

If our frame of reference is from Europe or Asia, or Latin American, Africa, or Oceania it will impact

Latin America accounts for over half of the foreign born residents in Oklahoma. Not surprisingly Mexico and Central America are far and away the largest contributors with South America a distant second. There are also approximately 8,000 residents of Oklahoma who were born in Africa, with the numbers pretty evenly distributed around the continent. Finally, Oceania which includes Australia, New Zealand and the South Pacific island nations account for around 1,900 Oklahoma residents.

What is important is that these folks are embedded in all facets of our lives. They are doctors, lawyers, and college professors. They also own businesses, and serve in our military and as emergency responders. They are our neighbors and our friends.

For additional information you might want to check into one or several of the country and ethnic-based societies and organizations. One example is the Hispanic Chamber of Commerce. Another is the Asia Society of Oklahoma (ASO) which is composed of 9 separate organizations: the Chinese Association of Greater OKC, the India Association



of Oklahoma, the Indonesian American Association of Oklahoma, the Iranian American Cultural Society, the Japan America Society of Oklahoma, the Korean Society of Oklahoma, the Philippian American Civic Organization of Oklahoma, the Taiwanese Association of Oklahoma, and the Vietnamese-American Community of Oklahoma City and Metro Areas.

These groups represent hundreds of individuals and families and I would encourage everyone to reach out and support these very important organizations. Personally I have gotten a lot of benefit from attending the events at the Raindrop Turkish House on North Classen Blvd. in Oklahoma City as well as the ASO activities.

The economic numbers are also very enlightening. According to the OK Dept. of Commerce, U.S. subsidiaries of global companies account for over 36,000 jobs in our state and they write pay checks to nearly 3% of Oklahoma's private-sector workforce. Oklahoma is also home to over 140 FDI (Foreign Direct Investment) companies. The major sources of FDI in Oklahoma come from France, Germany, the UK, Canada, Switzerland, Japan, and Mexico. Export-supported jobs linked to manufacturing accounted for 4.9% of Oklahoma's private-sector employment. These are big numbers.

And what about all those international students? According to the OK Dept. of Education there are over 8,600 students attending our colleges

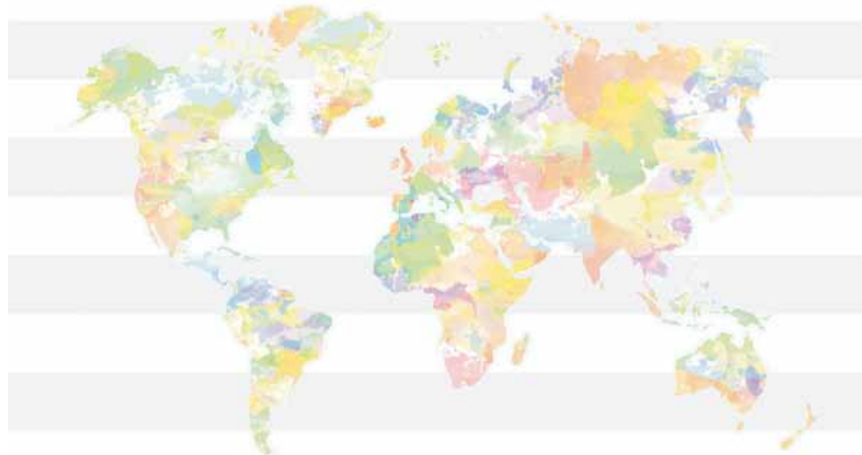
and universities who are from overseas. This ranks Oklahoma as 25th in the nation. OSU's main campus in Stillwater has the largest number, followed by the OU Norman Campus, the UCO campus in Edmond, the University of Tulsa, and Oklahoma City University.

The leading places of origin for foreign students in our state, by order are: China, India, Saudi Arabia, South Korea, and Nigeria. As a counter to this, each year we ship just under 2,000 of our students abroad. One other statistic to note here is that in 2011 the estimated foreign student expenditures in the State were \$189.1 million.

But of course all these facts and figures don't really touch the most important point. It's not about the dollars; it's about what we can learn from people we bump into on a regular basis who have very different life experiences than our own. Pluralism is not just a political hot button.

It is a way of life that we all experience every day without even thinking about it. If we will take the first step to reach out and to listen at a much deeper level than we are comfortable with, then maybe, just maybe we will realize that we really are all in this together.

Countless times I have told my children that the world is wide, go see as much of it as you can. I am now telling them that the world is also nearby and we can start our journey right here in Oklahoma.



Globalizing Higher Education

Cheryl Matherly, Vice Provost, Global Education, University of Tulsa

This essay outlines The University of Tulsa Strategic Plan for Internationalization: Preparing Students to Welcome the Responsibility of Citizenship and Service in a Changing World.



In 2010, Dr. Allan Goodman, President and CEO of the Institute for International Education, advised America's university trustees that, "U.S. institutions of higher education need foreign policies, but not in the traditional sense of the phrase. Their leaders need to formulate institution-wide policies to assess their current engagement with the world and future strategic agenda."

The University of Tulsa was already moving forward on this front. In August 2009, TU joined the American Council on Education's (ACE) Internationalization Laboratory. Over a sixteen-month period, TU worked closely with the ACE staff and a small cohort of peer institutions to develop a strategic plan for our future comprehensive internationalization.

More than eighty faculty and staff, including a fifteen-member steering committee, conducted a self-assessment of TU's current activities and developed The University of Tulsa Strategic Plan for Comprehensive Internationalization (SPCI).

What does it mean for a university to "internationalize"?

Internationalization of a university involves more than increasing international student recruitment or study abroad programs. The definition that we used to guide the TU strategic planning process describes internationalization as "the process of

integrating an international, intercultural, or global dimension into the purpose, functions, or delivery of post-secondary education."

In other words, an international viewpoint is embedded in all aspects of the university's teaching, service, and research functions.

The number of colleges and universities nationally describing internationalization as a priority has significantly increased in recent years. According to a 2012 study released by ACE, 93 percent of doctoral institutions, 84 percent of master's institutions, 78 percent of baccalaureate institutions, and approximately 50 percent of associate institutions perceive that internationalization has accelerated on their campuses in the past three years.

The reasons that so many universities have made internationalization a priority is that, like TU, they recognize that global engagement enhances the core functions of the university. Institutions report that internationalization is linked with:

- *Improving the quality of teaching, learning, and research.*
- *Promoting deeper engagement with national, regional, and global issues.*
- *Better preparing students for jobs in a globalized economy*
- *Increasing access for students to degree programs that are unavailable or scarce in their home countries.*
- *Enhancing opportunities for faculty development.*
- *Increasing the possibilities for faculty and students to participate in international research networks*



on pressing issues at home and abroad and benefit from the expertise and perspectives of researchers from many parts of the world.

- *Improving institutional policy-making, governance, student services, outreach, and quality assurance through sharing of experiences across national borders.*

What does it mean for TU to internationalize?

The campus committee that worked to develop the SPCI concluded that international initiatives already flourish throughout the campus.

The university is already home to a diverse international population of students and faculty; students are choosing to study abroad in record numbers; and, faculty are developing international research and teaching collaborations that advance their scholarship in important ways.

In order to remain competitive, however, the faculty, staff, and students of the university must change the ways we engage with the global community, both outside the borders of the U.S., as well as on our own campus. As it continues on this path, the university has committed to the ideal that this international, intercultural, and global dimension will permeate all aspects of the institution.

We identified direct and indirect benefits for TU and the greater Tulsa community from our internationalization initiatives. The successful internationalization of the university should be marked by the development of a more collaborative faculty and staff and the emergence of a more globally aware and engaged student body.

We see our international presence as key to attract and retain higher-caliber students and faculty and to prepare them to be more competitive for external funding. We seek to cultivate a student body prepared for the realities of a changing world and workforce.

Finally, with more focus on internationalization, the university situates itself to provide leadership in local, national, and global communities on crucial questions facing world societies today, especially as related to some of the university's key interdisciplinary initiatives such as energy, technology and the environment, cyber security, indigenous populations, community health, and entrepreneurship.

Strategic Recommendations

TU's Strategic Plan for Comprehensive Internationalization, adopted by the Board of Trustees in May 2011, identified six key recommendations:

1. *Establish centralized leadership for TU's internationalization plan*
2. *Develop international activities that support the university's leadership with interdisciplinary initiatives: energy, technology and the environment; cybersecurity; indigenous populations; community health; and entrepreneurship.*
3. *Deepen university programs in strategic geographic regions (Asia and the Americas)*
4. *Enhance recruitment of international students*
5. *Create programs that will support TU's activities to competitively recruit top academic students*
6. *Address related infrastructure issues that affect internationalization objectives*

In last academic year, we implemented a number of initiatives guided by these strategic recommendations.

We have launched a refocused Masters of Law degree in American Law (LL.M.) with a concentration in Sustainable Energy & Resources Law (SERL). The initial recruiting activities suggest that there is broad global interest in



The University of Tulsa’s mission statement challenges us to educate “men and women of diverse backgrounds and cultures” to “welcome the responsibility of citizenship and service in a changing world.”

By internationalizing the TU campus, our goal is to increase the knowledge and appreciation of the interconnectedness of global systems as they relate to language and literature, economics, politics, religion, the environment, law, and all natural systems and processes.

We see the enduring academic benefits of internationalization as fundamental to the quality of the TU educational experience.

Notes

- 1 Institute for International Education. 2010. "International education as an institutional priority: What every college and university trustee should know." New York: Institute for International Education.
- 2 Knight, J. 2003. "Updating the definition of internationalization" *International Higher Education* 33 p. 2.
- 3 ACE. 2012. "Mapping Internationalization on US Campuses: 2012 Edition." Washington, DC: American Council on Education.
4. Read more: <http://www.insidehighered.com/blogs/globalhighered/affirming-academic-values-internationalized-higher-education-call-action#ixzz20XwPkvBZ>

We have expanded our university partnerships in Brazil and in India, and launched our first international alumni club in India. We awarded \$30,000 for grants to faculty for support of activities related to the improved internationalization of the curriculum, the development or set-up of international experiences for students and faculty, international research projects, and other projects related to the SPCI.

We have created a new assistant dean for Academic English for International Students to provide more support for writing and communications skills for international students. And we are preparing to launch a new program for undergraduate students, the TU Global Scholars program, a high-profile, selective program that will provide substantial international coursework, experience in other cultures, and intensive or immersive foreign language instruction to undergraduate students.



World Languages in Oklahoma

Desa Dawson, M.A., Director of World Language Education, OK State Department of Education

HISTORICAL BACKGROUND

House Bill 1017

After the passage of HB 1017 in 1990, the Oklahoma State Board of Education identified the study of languages (foreign, Native American, and American Sign Language) as core curriculum. Several years later the content standards for world languages, commonly known as PASS, were developed after carefully considering the latest research in the field of second language instruction.

These standards reflect the profession's national standards created in 1996 by the American Council on the Teaching of Foreign Languages (ACTFL). With communication and culture as the cornerstone for all language learning, the state's goal was, and still is, for all Oklahoma students to learn "how, when, and why to say what to whom" in at least one other language (Oklahoma C3 Priority Academic Student Skills, p. 319).

Requirements in three major grade levels are addressed and noted in the chart insert below:

School districts were also given the option of choosing to begin an articulated, sequential program of study leading to even higher levels of proficiency beginning in kindergarten if they so desired.

Public schools had seven years to implement this program of study, and enrollment in world language courses steadily increased from 8.37% in 1990 to an all-time high of 18.46% of total student population, more than doubling the enrollment.

Oklahoma was seen as an innovator at the time in preparing students for an ever changing society and marketplace; however, when it became apparent that some school districts were not willing to comply or did not have adequate resources to comply with the requirements, it was decided to ignore noncompliance rather than continue working toward the state goal. Schools slowly realized they would not be penalized in any way for noncompliance, and world language enrollments began to drop. In 2011 world language enrollment was 13.13%.

World Languages Requirement in Oklahoma

Grades K-3: Languages Awareness is a required program in Oklahoma schools through which children gain the insight that other languages exist besides their own.

Grades 4-8: Grade 4 is the beginning of a required sequential language program in Oklahoma schools through which all students begin to develop proficiency in a language. By the end of the Grade 4-8 program sequence, students should demonstrate proficiency as described by the Novice Level progress indicators listed in this document.

Grades 9-12: Grades 9-12 provide continued sequencing of instruction for further language proficiency for Oklahoma students. School districts must offer at least two years of a specific language in high school. Districts may offer long-term, sequential programs in more than one language. Two Carnegie units of study (240 hours) of the same foreign language are part of the requirement for the Certificate of Distinction, an award that high schools may offer to high school graduates.

Oklahoma C3 Priority Academic Student Skills, p. 319



Teacher Preparation

Several changes occurred in university teacher preparation programs to accommodate WLOE requirements. Teaching credentials became K-12 certificates rather than secondary only.

Preservice teachers in all content areas and levels were asked to show Novice High proficiency in a world language in order to have an understanding of what their students would be learning in the classroom.

Ultimately, individual universities were allowed to determine how to define Novice High in their own terms. Unfortunately, some university programs today define completion of high school levels 1 and 2 with a grade of C or better as complying with the requirement.

Additional Considerations

Recent emphasis placed on high-stakes testing centered on other content areas, there has been an even greater decline in WLOE enrollments as schools try to increase time and resources available for areas of instruction seen as vital.

Decreased enrollments mean fewer teaching jobs available. This decreased likelihood of jobs in the PK-12 arena has led to fewer students graduating from WLOE teacher preparation programs and that, coupled with tighter university budgets, have resulted in the closing of some programs.

Complicating the issue further, the majority of PK-12 schools offer Spanish, and the certification exam in that language was recently revised to reflect a higher proficiency level, decreasing the pass rate, and reducing the number of available teachers.



CONCLUSION

The need to prepare students for a more globally competitive world has now become exceedingly important. Today's students must have 21st century skills upon which government, business, and educators agree should encompass world language study.

In recent research conducted by the Center for Applied Linguistics in Washington, DC (Foreign language teaching in U.S. schools: Results of a national survey, 2010.), Rhodes and Phfahl educators were encouraged to:

- Emphasize the need for high-quality foreign language education and make foreign language teaching and learning a priority in the K–12 curriculum.
- Ensure equal access to foreign language instruction for all U.S. students regardless of income, location, or type of school.
- Encourage and facilitate the establishment of intensive, long-term language programs that enable students to reach a high level of proficiency.
- Support foreign language teaching that begins in the early grades and continues through high school graduation, with instruction being carefully articulated so that each level builds on learning from the previous level.
- Work with institutions of higher education to increase the number of certified language teachers and ensure that they are prepared to provide high-quality instruction.

An important note is that, unlike other states, Oklahoma took steps over twenty years ago in 1990 to implement each and every one of the recommendations listed above, but now finds itself back at square one since the efforts were not sustained.



RECOMMENDATIONS

The following suggestions are offered to again put Oklahoma on the path to obtaining 21st century skills:

- Declare world languages as a critical shortage area.
- Meet with university personnel responsible for WLOE teacher preparation programs to discuss teacher recruitment and to find solutions to teacher shortages.
- Examine and promote program models that allow for efficient use of time and resources.
- Avoid the mistake of assigning WLOE teaching responsibilities to those who do not have the means to deliver the instruction.
- Starting with the secondary programs, develop a means to recognize exemplary programs.
- Convene a committee of all stakeholders to create a realistic timeline to implement regulations, make any suggestions for change, and create a system of accountability.
- Promote full immersion programs.
- Continue to seek solutions to full certification for Native American languages as well as elementary immersion teachers.

Thank you for allowing me to share my thoughts about world language issues in Oklahoma and make these recommendations. I look forward to the benefits world languages can bring to Oklahoma students and our society in general.



Raindrop Turkish House, Oklahoma

Orhan Kucukosman, Executive Director, Oklahoma City and Tulsa

Multiculturalism, interfaith dialog, and mutual understanding are some of the terms that are frequently debated both by the media sources and the members of the society. Some find these terms as a threat to U.S society and some others see them as a foundation for a better society.

Obviously, the second group makes it a more welcoming environment for other cultures, faiths and countries compared to those who find them to be posing a threat.

As a Turkish-Oklahoman, it is an interesting experience to be exposed to both views in Oklahoma on a daily basis. Even though Oklahoma is known as a state that is in the Bible belt, it is also true that the majority of the people in Oklahoma are respectful for the other religions, has institution to raise awareness for diversity and inclusive of Turkish community together with their belief and culture traditions. Therefore, Turkish community appreciates this characteristic of Oklahoma people.

On the other hand, the existence of negative, separatist, and intolerant comments made by Oklahoman politicians displays an opposite view for those who doesn't know Oklahomans really well. This causes a negative impact on those who are planning to settle or set up a business in Oklahoma.

The existence of actively performing cultural centers and dedicated interfaith dialog groups located in our great state of Oklahoma such as Raindrop Turkish House and Institute of Interfaith Dialog makes me as an individual hopeful for the future days.

I believe that the attempts of these kinds of institutions will not be fruitless and will help Oklahoma to become a more inclusive and a gratifying place for other cultures, faiths and countries. As to why and why not it is where

we desire it to be, we can refer to the factors of media's constant streaming of images that doesn't reflect the majority and the biased comments of the news media.

No matter what the factor is, it is true that intolerance might affect the decision and the judgment of a person or a community about a certain place. That includes businesses as well. In an environment that is not inclusive of other countries and cultures, especially in this global era, businesses will not stay for a long time. Business is based on a simple rule of supply and demand. If there is no demand for the product of the business, businesses will withdraw themselves from the area

Having Turkish businessmen here in Oklahoma is something that might benefit both the Turkish people and the people of Oklahoma. Just like any other business owner, Turkish businessmen hope to be successful in their business and make profit. There is a well-known Turkish expression that says 'The homeland of one is not where you are born but where you get fed'. So by being successful in a foreign land, Oklahoma, business owners will consider this land as their second homeland.

Moreover, Turkish businessmen are hoping to establish a Free Trade Agreement between Turkey and the United States. Turkey has that agreement with European Union and it is in effect since 1996. The agreement allows trade between Turkey and other countries without any customs restrictions. Turkey has Free Trade Agreements with 20 countries. That helps countries eliminate tariffs, quotas and preferences on most goods and services traded between them. Their goal is as simple as to contribute to society by creating jobs for fellow Oklahomans.

Turkish businessmen here in Oklahoma are aiming to establish a bridge for the trade, to contribute in the improvement of trading volume and in the betterment of the relationship between Oklahoma





*Turkish and Belorussian women meet - in Oklahoma - at the Raindrop Turkish House Festival in Tulsa (May 2012)
Far left: Darya Popova, Minsk, Belarus. Far right: Tatsiana Dashkevech, Lida, Belarus*

and Turkey. Although Turkish businessmen are not so many in Oklahoma, they are pretty active. In 2011, Turkish-Oklahoman businessmen established Turkish-American Chamber of Commerce and made a first step with aforementioned goals.

That chamber communicates with the Oklahoma City Chamber to bring Turkish businessmen here. It also assists American businessmen who would like to set up a business in Turkey.

We believe that there is no reason for Oklahoma not to become a global competitor over the years. The reason is that as a state Oklahoma has numerous advantages to make her a nationwide competitor such as being centrally located, holding an invaluable expertise in oil and gas drilling and the existence of vocational schools that produce qualified labor force. If these advantages are utilized and improved, the path to become a global

competitor will be open of Oklahoma. Certainly this is not an easy task. It just requires taking a variety of action in several areas.

First of all, the nationwide trips that are arranged by Chamber of Commerce of Oklahoma can be improved to establish cooperation with the overseas chamber of commerce. In that sense, we need to give more importance for our state's advertising.

Another item is that, currently, we don't have any substantial and large scale international business fair held in Oklahoma. Therefore, we believe that it is crucial to determine effective business sectors and motivate them to organize these kinds of international business fairs. In order to do that, we can determine countries, get in touch with their chamber of commerce, invite businessmen over and have them meet with Oklahoman businessmen.

Tulsa Sister Cities & Citizen Diplomacy

Becky Collins, President and CEO, Tulsa Global Alliance

The complete title of this article is Sister Cities in Citizen Diplomacy, Cultural Enlightenment and Economic Development.

Looking forward to 2032, one thing seems certain, the world will be smaller – we will have more interactions with more people from more cultures more often. Our relationships with those beyond our immediate surroundings will be a major determinant of our social, physical and economic well-being. Just as relationships within our close communities play a major role in our quality of life, relationships with others outside those close communities do also. The connection to people in other countries and cultures, the bridge that enables us to establish relationships with the people in those other countries and cultures, is often a Sister City partnership.

The U.S. Sister City program, sometimes called Twin Cities in other parts of the world, was founded by President Dwight D. Eisenhower 56 years ago. This program was created as a people-to-people, citizen diplomacy initiative to “promote peace through mutual respect, understanding and cooperation — one individual, one community at a time.” The program also recognizes and coordinates sister city, county, municipalities, oblasts, prefectures, provinces, regions, state, town and village linkages. This network unites thousands of citizen diplomats, educators, political and business leaders, youth and volunteers in programs in 136 countries across 6 continents.

What is a Sister City Program? A Sister City program is a volunteer group of ordinary citizens who, with the support of their local elected officials, form long-term relationships with people and organizations in a city abroad. Each Sister City program is independent and pursues the activities and thematic areas that are important to them and their community. Sister City programs promote peace through people-to-people relationships—with program offerings varying greatly from basic cultural exchange programs to shared research

and development projects between cities with relationships. A city may have anywhere from one to an unlimited number of sister cities, ranging from a few members to hundreds of volunteers, and may receive some support from local government.

Eleven cities in Oklahoma have Sister City relationships with twenty-five cities in many different countries. Tulsa has the most at eight and Oklahoma City is next with six, including the recent addition of Kigali City, Rwanda in 2010. Sister Cities can stimulate economic development through trade and investment. Interaction among city officials, business leaders, and active volunteers should lead to discovery of economic interests and needs between cities and states.

If economics is about using resources to meet needs, the interactions among the people of the Sister City partners should identify places where one partner has a need and the other has the resources to help meet that need. For example, the common economic interest between Tulsa and its German Sister City, Celle, is the oil and gas industry. Baker Hughes has operations in both Tulsa and Celle. The Japanese Ambassador to the United States became interested in aerospace opportunities between Tulsa and Japan partly due to friendships built through the active Sister City relationship between Tulsa and Utsunomiya, Japan. Education is also a key economic factor for Oklahoma now and will be in 2032.

Tulsa area universities and colleges are home to more than 1,275 international students who pump more than \$41 million into the economy, according to the Association of International Educators 2011 annual report. Oklahoma has more than 8,600 international students contributing \$189 million into the state economy, with Oklahoma State University in Stillwater having the largest number of international students of any state educational institution. Nationwide, the study found that foreign students and their dependents contributed approximately \$20 billion to the U.S. economy



Tulsa's Sister Cities



during the 2010-11 school year. It's a conservative estimate, including money spent on tuition, living expenses and for accompanying family members, but does not include money spent off campus or any "multiplier effect".

Dr. J. Markham Collins, Coordinator of International Programs for the Collins College of Business at the University of Tulsa, said the benefits go beyond economics, and include the cultural, linguistic and social contributions foreign students bring to campus life. "We're committed because of the diversity that they bring both socially and academically," Collins said. Business classes, for example, tap the experiences of international students to help explain international marketing.

Prosperity in 2032 will come from knowledge-based industries which specialize and trade globally. Knowledge and the process of learning must start early and never stop, and this holds true for learning about the world beyond our doorstep. Even today, many of us know people who have little experience outside of our state. They have never met a person from another country, or seen an ocean, or been east of the Mississippi River, for example. Sister Cities, through exchanges and education programs, provide opportunities to meet and learn about other people from other countries and cultures.

Tulsa's international exchanges include traditional school exchanges but also extend to firefighters, artists, lawyers, and beekeepers among others. Global learning and cultural enlightenment for children, teachers and families within the metropolitan area is facilitated by projects such as the award-winning Kids' World International Festival which hosts 60 cultural/country exhibitors and 15,000 participants and volunteers and the bank of cultural boxes containing artifacts of 43 countries available for area schools.

In its second fifty years, the Sister City programs are finding new ways citizen diplomacy can have positive impacts on our nation's and state's foreign relations - exploring how individual citizens and cities can build economic partnerships and support developing communities. Involved, individual citizens are empowered to become diplomats and represent their community and their country in new and meaningful ways.

Trade and development rely on relationships and these will need to span the globe in 2032 - only through cultural acceptance, appreciation and understanding - cultural enlightenment - can we expect to have the meaningful relationships required to thrive in that environment. Institutions such as Sister Cities will provide the learning and experiences necessary to understand and accept the many cultures of our 2032 world.



The Oklahoma Honorary Consuls Corps

James C. Collard, PhD, Oklahoma Academy Research Group, Shawnee

Oklahoma is privileged to have the services of a unique group of individuals known as the Honorary Consular Corps. These Oklahoma citizens are diplomats who are bringing great value to our State. So it might be a good idea to know something about what they do.

Originally Consuls were the highest magistrates in the Roman Empire and therefore served in a domestic judicial role. However, over time the title was bestowed on various state officials whose role also included administering maritime and commercial law and managing trade relationships.

Today a Consul is a person who serves as the official representative of the government of one country in the territory of another. Their primary function is to assist and protect the citizens of the Consul's country and to facilitate trade and friendship between the peoples of the two countries. It is also important to understand that the Consul is not an Ambassador who is a representative from one head of state to another.

There is only one Ambassador from one country to another; however there may be several Consuls. (All our Oklahoma's Honorary Consuls carry U.S. State Department credentials.)

The office of the Consul is known as the Consulate and is subordinate to the Embassy. The head of the Consulate is normally known as the Consul General. Within the U.S. there are numerous Consulates that are generally located in the major cities such as New York, Chicago, Houston, L.A. ,etc. Houston contains the majority of the Consulates that are responsible for Oklahoma.

From the standpoint of daily activities, Consuls sometimes notarize documents and issue visas. However, as noted above, the principle role of a consul is trade promotion. Therefore they are a very important resource for both exporting, importing, and foreign direct investment (FDI).

As a result, Oklahoma's businesses are well advised to reach out to the Consuls for the countries they are most interested in. But it doesn't stop there for the Consuls are also available to assist the citizens and business people of their countries with common, everyday problems such as learning how to adjust to their new surroundings and making introductions.

Our governmental bureaucracies are intimidating enough for our own citizens. Think about how difficult it would be for someone who is new to our culture.

Finally, some Consuls are not career officials of the represented countries but are local residents with the nationality of the sending country or in some cases even citizens of the other

country. And this is where Oklahoma comes into play.

Of the 14 Honorary Consuls in our State, approximately half are U.S. citizens. All of the Oklahoma Honorary Consuls are either retired or have full time jobs that are not directly related to the Consul duties.

Even so, these folks are still subject to being called out at any time of day or night to assist a citizen of the appointing country. Think about how important this is!



Hosting the Japanese Consul General at the OSU School for International Studies. Honorary Japanese Consul General to Oklahoma, Lloyd Hardin, second from right.



Immigrants Invent Cool Things

Elizabeth Dwoskin, BusinessWeek, July 1, 2012

Each year the U.S. Patent and Trademark Office awards about 200,000 patents to inventors. Last year a Stanford student built a camera that lets users change what's in focus after snapping a shot; Massachusetts Institute of Technology researchers invented a tiny, foldable car; and a patent was awarded for devising a metal that is as strong as steel but can be molded like plastic.

Some of these patents are just cool. Others may turn out to have enormous economic value: This year, Microsoft paid \$1.1 billion to buy AOL's patent portfolio, which comes to about \$1.2 million per patent. All of the patents above have one thing in common: They represent the work of immigrants to the U.S.

Which is why policy makers should flag a recent study that found more than three-quarters of patents from America's top ten patent-producing universities, including MIT, Stanford, and the University of Wisconsin-Madison, were the result of breakthroughs by immigrants. Those universities produced 1,466 patents—a fraction of the total awarded—but many were in such cutting-edge fields as information technology and molecular biology.

The study was put out by the Partnership for a New American Economy, a group of 450 mayors and CEOs that pushes for immigration reform. (The group is chaired by New York City Mayor Michael Bloomberg. Bloomberg LP owns this magazine.) Its members, including Steve Ballmer of Microsoft and Bill Marriott Jr. of Marriott International, have been known to complain about how the government's immigration policies hinder their companies' ability to bring highly skilled workers into the country.

The group has a clear bias, but the corporations and their politician allies have a point. Foreign graduate students—there are more than 400,000 on student visas—have very limited options if they want to extend their stay in the country. If an employer



U.S. citizenship candidates, Los Angeles, 6/27/12

sponsors them, they can apply for an H1-B visa for highly skilled workers. There are only 85,000 slots, and many of those will be taken up by current employees who are seeking to renew current visas for themselves and their spouses. This year the H1-B cap for foreign graduates was met in just 68 days, compared with more than 200 days both last year and the year before.

The group wants to lift the cap on H1-B visas, but they also have another interesting idea that is gaining traction in Congress: a special "startup" visa for immigrants who create companies and a certain number of jobs in the U.S. The mayors and their corporate allies say other countries take such economic considerations into account when they give out visas, doing so far more often than the United States.

Politicians of both parties are coming around to the idea of issuing more visas to this special category of students. President Barack Obama recognized them in his State of the Union address. And in his immigration speech two weeks ago, Romney called for an end to all caps for foreign students who excel in math and science. Of course, that's not likely to happen before the presidential election. Until then, foreign entrepreneurs looking for a way to work in the U.S. without running afoul of immigration laws have one last option: They can sign up to live and work on a giant cruise ship off the California coast.



“Is That Allowed? It is Here”.

Peggy Noonan, New York, NY

Wall Street Journal, July 7, 2012.

There’s something Haley Barbour reminded me of called the Gate Rule. The former Mississippi governor said it’s the first thing you should think of when you think about immigration. People are either lined up at the gate trying to get out of a country, or lined up trying to get in.

It says something about the health of a nation when they’re lined up to get in, as they are, still, with America. It says, of course, that compared with a lot of the rest of the world, America’s economy isn’t in such bad shape.

But it says more than that. People don’t want to come to a place when they know they’ll be treated badly. They don’t want to call your home their home unless they know you’ll make room for them in more than economic ways.

And so this July 4, a small tribute to American friendliness, openness, and lack of—what to call it? The old hatreds. They dissipate here. In Ireland, Catholics and Protestants could be at each other’s throats for centuries, but the minute they moved here, they were in the Kiwanis Club together.

The Mideast is a cauldron, but when its residents move here, they wind up on the same PTA committee. It sounds sentimental, but this is part of the magic of America, and the world still knows it even if we, in our arguments, especially about immigration, forget.

So, three stories of American friendliness, openness and lack of the old hatreds.

Friendliness: Henry Kissinger

There was a teenager who came here with his parents and younger brother. They arrived in New York and got an apartment on 181st Street and Broadway. He spoke little English but went right into public school. The family needed money, so

when he was 16, he transferred to night school and got a day job at a shaving-brush factory. He wore big, heavy rubber gloves and squeezed bleaching acid out of the bristles. Soon he went part time to City College, and then he entered the U.S. Army.

This is a classic immigrant story. It could be about anyone. But the teenager went on to become an American secretary of state, and his name is Henry Kissinger. Here is another part of the story that is classic: how Americans treated him. The workers at the factory were older than he, mostly Italian-American, some second-generation. They wanted to help make him part of things, so they started taking him to baseball games.

“It was the summer of 1939. . . . I didn’t know anything about baseball,” he remembered this week. Now here he was in the roaring stands at Yankee Stadium. About the people in the bleachers, he said, “the most striking thing was the enormous friendliness, the bantering.” In Hitler’s Germany, “I saw crowds, I’d go to the other side of the street.” Here, no sense of looming threat. “That I would say was a very American part of my experience.”

He was “enchanted” by the game “the subtlety, the little nuances you can watch what the strategy is and how they judge what the opponent is likely to do by the way the fielders position themselves. . . . It is a game that combines leisure with highly dramatic moments!”

And there was the man called Joe DiMaggio. The factory workers would sort of say, “If you take a look at Joe DiMaggio,” you will learn something about this country. DiMaggio was “infinitely graceful” as a fielder, “he would sort of lope towards the ball . . . nothing dramatic, he didn’t tumble, he didn’t strut, and he made it look effortless.” He didn’t “stand there wagging his bat. . . . He would just stand there with his bat raised. . . . He was all concentration.”



Years later they met, and Mr. Kissinger, faced with his boyhood idol, that symbol of those early years, was awed. It was like being a kid and meeting a movie star: “I didn’t know exactly what to say to him.” They became friends. “He had a fierce kind of integrity.”

So Henry Kissinger learned some things about Americans, and America, thanks to a bunch of Italian guys in a brush factory downtown. They were good to him. They were welcoming. Probably when they or their people were new here, someone was good to them.

Openess: Mary Dorian

That is American friendliness. Here is American openness—meaning if you are open to it, it will be open to you. Mary Dorian was an uneducated Irish farm girl with no family to speak of and no prospects. She came to America on her own, around 1920. She wrote to the one girl she knew, a distant cousin in Brooklyn, to ask that she meet her at the ship.

She landed at Ellis Island, went to the agreed-upon spot, and the cousin wasn’t there. She had forgotten. Mary, my grandmother, spent her first night in America alone on a park bench in lower Manhattan.

She went on to find Brooklyn and settle in. She joined an Irish club and a step-dancing club. They didn’t have anything like that back home. We make a mistake when we worry that sometimes immigrants come here and burrow more into their old nationality than their new one. It’s not a rejection of America, just a way of not being lonely, of still being connected to something. She met her husband in an Irish club, and she got a job hanging up coats in a restaurant. Then she became a bathroom attendant at Abraham & Strauss on Fulton Street in downtown Brooklyn.

When she died in 1960, a lot of black people came to the funeral. This, in a Brooklyn broken up into separate ethnic enclaves, was surprising,

but it wouldn’t have been to her. They were her coworkers from A&S, all the girls who worked in the ladies room, and their families. They loved her.

When she died, Mary Dorian had a job, a family and friends. She had come here with none of those things. She trusted America, and it came through.

Hatreds: Mike Nichols

As for the old hatreds:

There was a 7-year-old boy who came over from Germany on the SS Bremen. He was travelling with his younger brother—they too were fleeing the Nazis and a steward. The Bremen anchored on Manhattan’s west side on May 4, 1939, and the children were joined by their father, who was already in New York.

They stood on deck watching the bustle of disembarking, and then the boy saw something. “Across the street from where we were, and visible from the boat, was a delicatessen which had its name in neon with Hebrew letters,” he remembered this week.

He was startled. Something with Hebrew letters—that was impossible back home. He asked his father, “Is that allowed?” And his father said, “It is here.”

It is here.

The little boy was Mike Nichols, the great film and stage director, who went on to do brilliant things with the freedom he was given here.

Sometimes we think our problems are so big we have to remake ourselves to meet them. But maybe we don’t. Maybe we just have to remember who we are—open, friendly, welcoming and free.

Happy Fourth of July to this tender little country, to the great and fabled nation that is still, this day, the hope of the world.



The Vanishing H-1B Visa

Chad Graham, San Jose, CA

Published in Silicon Valley/San Jose Business Journal, May 25, 2012.

Chad Graham is an immigration attorney with Graham Adair in San Jose, CA.



What happens when the H-1B visas are gone?

In the Bay Area, foreign workers have become an integral part of the work force and high-tech innovation. Many possess rare skills and unique talents that companies need to stay competitive in constantly evolving markets. But the limited number of H-1B visas stifles companies from onboarding foreign talent.

There are 85,000 H-1B visas that can be issued in a fiscal year. Although this may sound like a lot, this year's H-1Bs will be gone within three months of becoming available. The current H-1B limit was adequate during the economic downturn, but as Silicon Valley roars back to vitality, 85,000 will not be enough. It is very likely that all H-1Bs will be gone by mid-June after only becoming available on April 2. Once H-1Bs are gone, companies will be unable to hire new H-1B workers until October 2013. They will be forced to explore other options, which could include shifting more business overseas where these high-level workers are readily available.

Fortunately, companies have some alternatives to H-1Bs. If the individual is a citizen of a country that has signed a free trade agreement with the United States, he or she can apply for a work visa. These countries include Canada, Mexico, Singapore, Chile and Australia. The U.S. government has carved out specific work visas for professionals from these countries and they are available at any time during the year.

Companies often find young talent at colleges and universities in the United States that attract foreign students. These students usually come here on an F-1 visa, which allows them to apply for work authorization.

Students can get as many as 29 months of work authorization after graduation. This is great because during that 29-month period, employers can decide whether the student is a good fit and, if so, file for an H-1B.

More and more often we are seeing U.S.-based companies hire workers overseas and place them at an affiliated foreign office where immigration laws are less restrictive. After one year of employment at an overseas location, the employee can qualify for a U.S. work visa as an intra-company transferee.

These visas are not limited, so companies can bring over as many of these employees as they need. Unfortunately, the Department of Homeland Security has started to view this as a way that some companies are bypassing the H-1B process, so there has been low, but increasing, resistance for some transferring employees trying to enter the U.S.

Congress needs to modify current immigration laws to accommodate rising demand for H-1Bs. The current H-1B limit was set back in the early '90s. As demand increased, the H-1B limit was raised to 135,000 in 1999 and then to 215,000 in 2001. When the interim increases sunset in 2004, the H-1B limit dropped back to its current level.

This is clearly insufficient for today's needs. In the meantime, U.S. companies with a need to hire foreign talent should realize that reaching the annual H-1B limit does not mean they are out of luck. It is simply the beginning of the discussion.



The Visa Stalemate

Paul Basken, *The Chronicle for Higher Education*, August 13, 2012

Foreign Scientists and U.S. Policy Makers Seek Ways Around Visa Stalemate:

While Ankit Agarwal was a chemical-engineering postdoc at the University of Wisconsin at Madison, he came up with an idea that could save thousands of lives.

An expert in nanotechnology, Mr. Agarwal helped devise a way of embedding tiny amounts of silver, a known antibacterial agent, into skin grafts.

That, he says, could prevent most of the 100,000 deaths each year in the United States attributed to infections of the grafts, which are used on patients recovering from burns, ulcers, or surgeries.

Yet Mr. Agarwal faced one big obstacle to saving all those lives: He is a native of India, so staying in the United States and starting a company that could make his new style of graft probably meant waiting several years while working for another U.S. company that would sponsor his visa application.

“That,” he said, calculating the various minimum time commitments involved, “would have put my start-up idea on hold for four years.” With so many lives at stake, it was a wait that Mr. Agarwal wasn’t willing to accept.

The dilemma Mr. Agarwal faced was not unique. Every year some 40,000 foreign students earn a master’s or doctoral degree in science, mathematics, and engineering fields from U.S. universities. Some, including Mr. Agarwal, figure

out creative ways to stay. But surveys show thousands more might be interested in staying in the United States if allowed by immigration law. Many of those graduates can in fact remain in the United States, at least for a little while. Under current law, science and engineering students are allowed to stay in the country for up to 29 months after graduation if they are working. And those with jobs can then apply for one of a limited number of employment-based visas—a category in which the annual demand regularly outstrips the supply.



Ankit Agarwal (left) and a fellow researcher work in a lab at the U. of Wisconsin at Madison, where as a graduate student Mr. Agarwal helped develop an infection-resistant type of artificial skin. He now leads a company that produces the material. Photo by Andy Manis for *The Chronicle*.

Despite being poised to lead a new company that would produce his antibacterial artificial skin, Ankit Agarwal, like many other foreign researchers, struggled to legally stay in the United States.

But, as Mr. Agarwal learned, the odds are even slimmer for those foreign graduates who want to stay and start their own companies.

There’s no specific visa

category for budding entrepreneurs, and there are few options for foreigners wanting to stay in the country while self-employed.

“It is clear that we don’t make it easy” on foreign entrepreneurs, said Jean-Lou Chameau, president of the California Institute of Technology. Mr. Chameau is among 90 university presidents who in June signed a letter to the White House and Congressional leaders describing the severe economic costs of expelling such highly skilled scientists.

The presidents cited a new study showing that foreign-born inventors were credited as



contributors to more than 75 percent of the patents issued last year to the nation's top 10 patent-producing universities. The study was produced by the Partnership for a New American Economy, a bipartisan group of mayors and business leaders seeking changes in immigration law.

The patent data is "irrefutable proof of the important role immigrants play in American innovation," the university presidents wrote in their letter.

The traditional focus of such lobbying efforts has been the H-1B program. A primary tool of the U.S. high-tech industry, it allows 65,000 temporary visas a year for companies to hire foreign workers in specialty occupations. Even with that many visas, all those slots were taken this year within just 10 weeks.

The H-1B program is limited by Congress in large part because of fears that its beneficiaries are taking jobs from Americans. Advocates reject such objections, citing numbers that show that the United States has too few qualified workers for the number of high-tech job vacancies. A

Georgetown University analysis projects that the country will face a shortfall of 230,000 qualified advanced-degree science and technology workers by 2018. And the United States will increasingly need foreigners to help fill that shortfall, especially as cash-strapped U.S. universities fill their classrooms with foreign-born students who can afford tuition. The latest annual report by the Institute of International Education showed the number of foreign-born students at U.S. colleges increased 5 percent for the 2010-11 academic year, marking the fifth straight year of growth.

Now Mr. Chameau and other university leaders are part of a wider effort to move beyond the arguments over the H-1B visa by putting more

attention on the specific need to keep foreign entrepreneurs with the skills to start companies and create even more jobs.

So far, the options for foreign science graduates who want to start a company in the United States are few.

For a self-employed foreigner, the main U.S. visa categories are "O-1," for a temporary stay, and "EB-1," for the path toward a green card and permanent residency. Both are broadly defined categories, designed for foreigners deemed to have an "extraordinary ability" in a particular field. That's doesn't necessarily mean an entrepreneur, and the eligible fields are far beyond just the sciences, extending to the arts, business, athletics, and entertainment.



And the allocation of such visas is well below even the limited H-1B numbers, with about 12,000 O-1s and 25,000 EB-1s issued last year. U.S. immigration law does have an even smaller visa category specifically designed for "entrepreneurs," though the term in this case is generally understood to mean wealthy investors, each of whom must put at least \$500,000 into a job-creating project.

A Success Story

Out of desperation, Mr. Agarwal applied for a visa in the EB-1 category. He said he asked several immigration law firms for help, and was repeatedly told that the odds were so low their lawyers didn't want to risk their reputations by trying. He finally did find one lawyer, John J. Gallini in the Boston area, who agreed to try, having had luck with science graduates from the Massachusetts Institute of Technology.

Mr. Gallini succeeded, winning Mr. Agarwal the visa and then a green card in June 2011. Even Mr.



ways it can change policies and practices to boost entrepreneurship.

The group's recommendations, which are about to be adopted, include creating a new Web portal and assembling a team of specialized immigration officers dedicated to helping entrepreneurs. But the program is designed only for temporary visas, and its changes cannot alter Congress's numerical limits on immigration.

Still, the immigration agency does have some flexibility, if it chooses to use it. Agency data compiled for *The Chronicle* show that the agency last year granted 2,118 permanent visas in the category used by Mr. Agarwal, reserved for immigrants "with extraordinary ability." That's a drop of 45 percent from the previous year. And it granted 2,458 visas in a related EB-1 category, for "outstanding professors and researchers," down 39 percent from 2010.

Mr. Cosgrove said the agency made no changes in policies that would affect those numbers, and would not comment on possible reasons for the declines. The agency data do reflect wide year-to-year swings, with the 2010 approvals at the agency's highest levels in five years.

Mr. Gallini, the attorney who helped Mr. Agarwal get his visa, said he sees signs that approval patterns reflect political factors, including Congressional and presidential elections, and periods of growing public awareness of the "brain drain" caused by rejecting highly skilled foreigners.

That variation does appear to be changing, with the agency apparently more determined to set more predictable expectations for approvals, Mr. Gallini said. "There's been a little bit too much subjectivity in the process," he said.

And lawmakers from both parties, though mostly Democrats, are continuing to push for bills that would create new visa categories, including permanent residency, for foreign students who earn advanced degrees in math and science fields.

Doing Better Back Home?

The changes, though, may be coming too slowly. Already there are signs that immigrants in general, and highly trained scientists in particular, are voting with their feet. The Pew Research Center reported in April that net migration from Mexico □ for decades the largest supplier of U.S. immigrants □ has stopped and may have reversed. And experts surveying foreign-born scientists say it's hard to be sure how many of them really want to stay, given all the difficulties involved.

"There are no hard data on this," said Vivek Wadhwa, an executive in residence at the Pratt School of Engineering at Duke University who produces surveys of immigrant entrepreneurs.

"Our research showed that the majority of students wanted to stay a few years after graduation, but they were worried about getting visas, saw greener pastures at home, and planned to return," Mr. Wadhwa said. His work, financed by the Ewing Marion Kauffman Foundation, also involved interviews with scientists who returned to their native countries and often believe they "are doing better back home," Mr. Wadhwa said.

And even among supporters of expanded entrepreneur visas, it's not immediately clear how to draw the line in a way that would embrace the immigration of talented scientists without encouraging the creation of low-quality diploma mills. Already there have been examples of education-related visa abuses like at Tri-Valley University, a California institution raided last year by federal agents after it was found to be enrolling hundreds of foreign students who actually were working full-time, low-level retail jobs.

As entrepreneur status is hard to define, U.S. policy should tie such visas to a degree in the sciences from an accredited university, Mr. Chameau said. That way, even if a foreign graduate fails as an entrepreneur, he or she will still be valuable to the U.S. economy. "We are talking here about talented people who will succeed one way or another" in the United States, Mr. Chameau said. "And that success will help us."



Section 4

Trading Globally



U.S. Cities in the Global Economy

McKinsey Global Institute, April, 2012

If the 21st century is the century of cities, as some observers characterize it, urban America begins the millennium in a strong position. Large cities in the United States—and in particular the nation's broad swath of dynamic middleweights—dominate the economy as in no other region of the world.¹

They also loom large in the urban world. Almost one in seven of the City 600, the group of cities that is expected to contribute 60 percent of global GDP growth to 2025, is in the United States. Large US cities are expected to generate more than 10 percent of global GDP growth in the next 15 years, a larger contribution than all of the large cities of other developed countries combined. So although the burgeoning cities of Asia have seized the public imagination, US cities will remain an important part of the US and global growth story over coming decades.

But US cities face turbulent times ahead as the economy strives to recover from the Great Recession. In the next few years, many cities are likely to grapple with the dampening impact of deleveraging on economic activity as the public sector and individuals attempt to pay off high debt levels, as well as persistently high pockets of unemployment. They also face longer-term headwinds including the aging of the population, which will require even more emphasis on boosting productivity, innovation, and skills. Policy makers and businesses need to find ways through these difficulties in order to play their part in the growth and renewal of the US economy.²

There has been no single recipe for success—nor is there likely to be one in the period ahead. In this report, MGI examines the importance of cities in the US economy and compares their role to the cities of other regions. The report describes urban GDP growth patterns over past decades and highlights some of the major trends facing urban America to arrive at a sense of how cities will navigate the challenges ahead.

GROWTH DRIVERS

US cities, particularly “middleweights”, will continue to drive growth

Today, large US cities have more weight in the US economy than do large cities in any other major region. In 2010, 259 large US cities generated almost 85 percent of US GDP. During the same period, large cities in Western Europe accounted for less than 65 percent of the region's GDP. Among emerging regions, metropolitan China accounted for 78 percent of China's GDP and the large cities of Latin America contributed 76 percent to regional GDP.

Large US cities have such relative economic weight for two reasons. First, they are home to 80 percent of the population compared with less than 60 percent in Western Europe. Second, they have a relatively high per capita GDP premium. The average per capita GDP of large US cities is almost 35 percent higher than in smaller cities and rural areas; in Western Europe, this premium is about 30 percent.

The relative weight of different regions in the world economy changes when we home in on the economic clout of their large cities. Even though Western Europe's GDP exceeded that of the United States by nearly 10 percent in 2010, the combined GDP of large US cities exceeds that of large Western European cities by more than 20 percent. It is America's cities that explain why the United States continues to enjoy higher per capita GDP than Europe. The higher share of US urbanites—and the fact that they command a larger per capita GDP premium over US smaller towns and rural areas than do their European counterparts—explains three-quarters of the per capita GDP gap between the two economies.

The nation's largest and well-known megacities of New York, New York, and Los Angeles, California, will continue to prosper.³ New York is on course



US cities ...

More than

10%

of global GDP growth
to 2025 will come
from large US cities

80%

of the US population
lives in large cities,
vs. less than

60%

in Europe

Almost

85%

of US GDP was generated
by 259 large cities in 2010,
while the large cities of
Western Europe contributed
less than

65%



... in an urban world

3/4 of the US lead in per capita GDP over Western Europe is explained by differences in the regions' large cities

Just over

255 middleweight cities are in the United States,
vs. just over **180**
in Europe

2nd largest city in the world in 2025 will remain New York ...
4th largest city in 2025 will be Los Angeles



to remain the second-largest city by GDP in the world in 2025, and Los Angeles to rise from sixth place today to become the fourth-largest city. But the weight of these megacities in the US economy is not decisive to the overall importance of cities in the United States. London and Paris have a smaller share of the overall Western European population—6 percent, compared with the combined population of the US megacities of 10 percent of the total US population—but they enjoy a significantly higher per capita GDP premium than their US counterparts. Paris and London contribute 9 percent to Western Europe’s overall GDP, compared with the 13 percent contributed by New York and Los Angeles.

Instead, the true vigor of America’s urban economy comes from a broad base of dynamic middleweights and the relatively high per capita GDP they achieve. There are just over 255 middleweight cities in the United States, compared with just over 180 in Europe. And they generate more than 70 percent of US GDP today, compared with just over 50 percent in Western Europe. In fact, the top 28 US middleweights alone contribute more than 35 percent of US GDP. The dynamism of middleweights in the United States is a characteristic of today’s global urban expansion, making them an interesting group to understand for both US and global growth prospects.

NO SINGLE BLUEPRINT: US cities have varied widely in their performance - there is no single blueprint for future success

While the overall performance of urban America has been a strong one, the fate of individual cities has varied widely. Among middleweights in the top 30 cities, considerable changes have occurred in their rankings by GDP over the past 30 years. Cleveland, Ohio, for instance, dropped from 17th place to 27th, while Phoenix, Arizona, rose from 28th place to 13th. Five cities have dropped out of the top 30 completely and been replaced by newcomers.⁴

The GDP growth of a city consists of growth in its population and increases in its per capita GDP. Different population growth rates explain most of

the differences in GDP growth performance among US cities. Fast-growing cities on average posted growth in their populations of two and a half times the national average even while experiencing per capita GDP growth rates nearly identical to the national average.⁵

A favorable mix of sectors is a factor in the fast growth of top-performing large US cities—but is less important than observers often assume. The mix of sectors of the fastest-growing cities can explain 15 percent higher GDP growth than the average urban GDP growth rate.⁶ But in fact this group has outpaced the average by more than 45 percent, indicating that a favorable mix of sectors explains only one-third of their outperformance.

Broad economic trends contribute to the diversity of experience across US cities. Changes in the economic environment help explain why some cities thrive and others don’t. We have seen the rise and decline of manufacturing cities; the lift that Sun Belt cities in the South and West have received from their favorable climates; and the impact on Eastern and Western cities from a shift in global economic activity, away from Europe and toward Asia, and from the Atlantic to the Pacific.

The diversity of growth patterns among strongly performing US metropolitan areas suggests that there is no single path to economic success. Cities that have outperformed their peers in GDP growth include rapidly growing “gazelles” such as Austin, Texas, and Raleigh, North Carolina, which have outperformed the US average in both per capita GDP and population growth by building on their high-tech presence and strong collaboration with local universities.

Others such as Dallas, Texas; Atlanta, Georgia; and Salt Lake City, Utah—which we might call “affordable metropolises”—have outperformed the average national average GDP growth because their populations have expanded rapidly despite per capita GDP growth that was slower than average. Yet another set of large, established cities such as Boston, Massachusetts, and Washington, DC—“alpha middleweights”—outperform others with significantly above-average per capita GDP and



sustain moderate growth by leveraging the strength of their existing economic base.

DIFFICULT TIMES: Policy makers and companies need to navigate difficult times ahead

In the years ahead, US cities will face a number of strong headwinds against growth. In the short term, many urban centers will need to grapple with high unemployment and deleveraging. In the longer term, cities will need to deal with declining population growth, demographic shifts and aging, and less labor mobility than in the past. These are likely to constrain purely population-driven growth strategies and further increase the intense competition for talent.

Yet large US cities have time and again demonstrated that they collectively have the resilience and capacity to adjust to new situations. There is no reason this will not be the case in coming decades, too. As in the past, the trump card for urban America as it navigates its way toward growth and renewal will be the diversity of strategies and experiences of individual cities. While there is no single blueprint for all cities to follow, there are workable approaches that have proved effective for policy makers and businesses.

Key approaches for policy makers

Know thyself and tailor strategy accordingly. Cities need to understand their strengths and weaknesses, as well as the impact of demographic and other trends on their prospects, and set their strategy accordingly. Large metropolises need to compare themselves and benchmark against an increasingly global urban landscape. Smaller cities need to prioritize to maximize their unique strengths.

Excel in execution. The way policies and strategic plans are carried out is critical to success. Involving the private sector and a broad range of stakeholders has a proven track record.

Be connected. Rather than seeing other cities as competition, building connections to other US and global cities can be a source of strength and ideas.

Key approaches for businesses

Be granular in the search of growth. In a diverse US urban landscape, companies need a detailed understanding of where the growth opportunities are and need to ensure that they are sufficiently nimble to respond to changing circumstances.

Engage actively in the search for talent. Skills, particularly technical ones, are going to be in increasingly short supply. Businesses need to understand which cities can offer the most attractive workforce and production assets.

Collaborate with cities to carve out a competitive environment. Companies should work with cities, many of which are keen to attract business, to inform local leaders of their needs and what policies would be most conducive to a competitive urban environment.

Despite the severe challenges they face, US cities start from a more robust platform than their peers in other developed regions. The strength of urban America lies in its diversity and the broad swath of middleweight cities—an urban profile that we are seeing play out across the urban world.

END NOTES

1 Consistent with the MGI Cityscope database, we define large cities as metropolitan areas with populations of 150,000 or more. The 259 large US metropolitan areas consist of the two megacities of New York, New York and Los Angeles, California, with populations of ten million or more, and 257 "middleweight" cities with populations of between 150,000 and ten million.

2 For readers interested in MGI's work on growth and renewal and employment in the United States, see, for example, *Growth and renewal in the United States: Retooling America's economic engine*, February 2011; and *An economy that works: Job creation and America's future*, June 2011 (www.mckinsey.com/mgi).

3 The metropolitan area of Los Angeles includes the Californian cities of Long Beach and Santa Ana, and the metropolitan area of New York includes Newark, New Jersey.

4 The metro areas that have dropped from the top 30 by GDP from 1978 to 2010 are New Orleans, Louisiana; Milwaukee, Wisconsin; Columbus, Ohio; Indianapolis, Indiana; and Buffalo, New York; and the new entrants to the top 30 are Riverside, California; Portland, Oregon; Tampa and Orlando in Florida; and Sacramento, California.

5 We define fastest-growing cities as those that have achieved GDP growth that is 25 percent higher than the US average between 1978 and 2010.

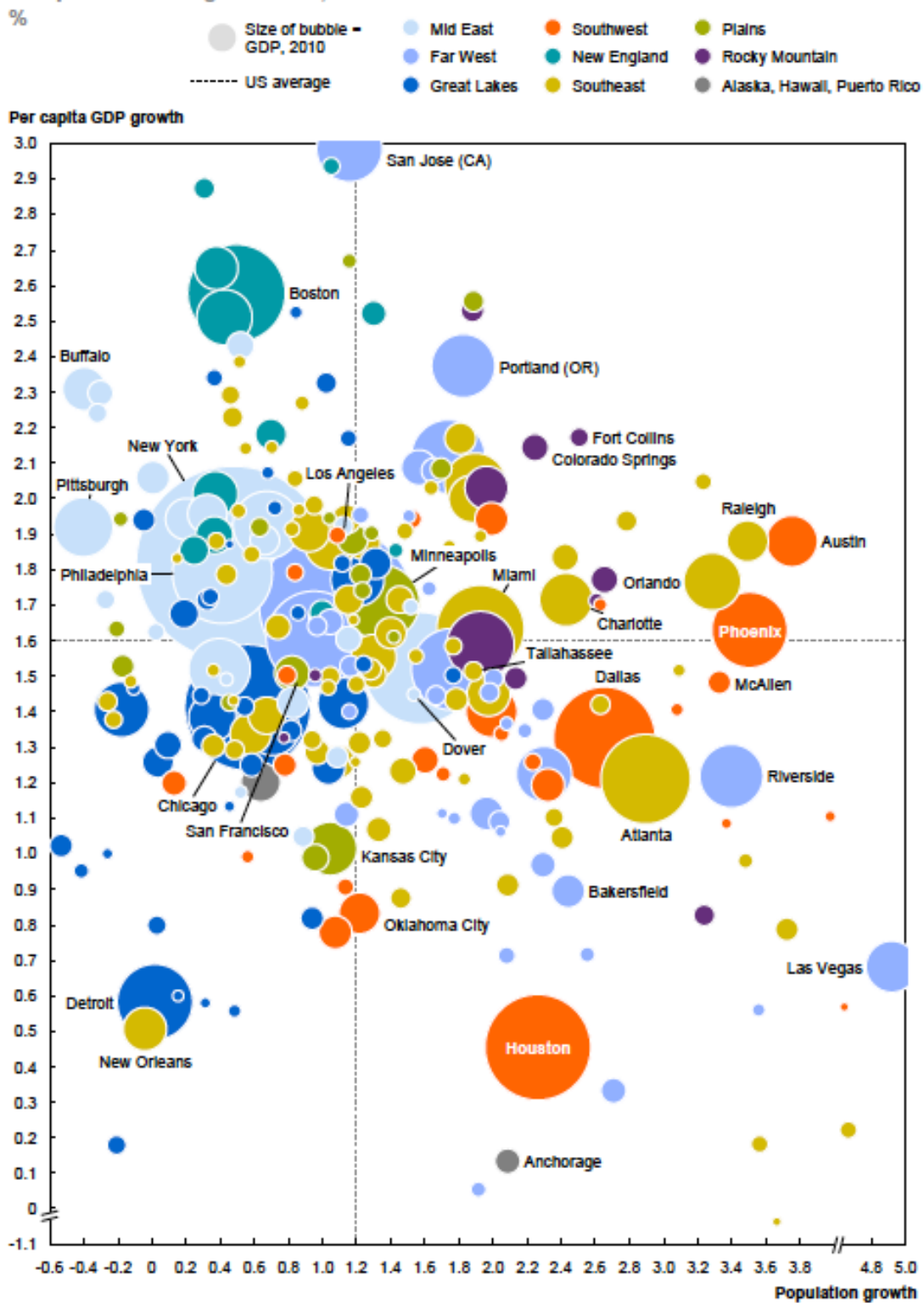
6 The sector breakdown is based on a 20-sector split of the economy.



Exhibit E2

The growth patterns of individual cities have varied widely

Compound annual growth rate, 1978–2010



Israel: Where Tech Keeps Booming

James Glassman, George W. Bush Institute, Dallas

This is a book review of “Start-Up Nation” by Dan Senor and Saul Singer; Wall Street Journal, November 23, 2009.

‘There are more new innovative ideas . . . coming out of Israel than there are out in [Silicon] Valley right now. And it doesn’t slow during economic downturns.’

The authors of “Start-Up Nation,” Dan Senor and Saul Singer, are quoting an executive at British Telecom, but they could just as easily be quoting an executive at Intel, which last year opened a \$3.5 billion factory in Kiryat Gat, an hour south of Tel Aviv, to make sophisticated 45-nanometer chips; or Warren Buffett, who in 2006 paid \$4 billion for four-fifths of an Israeli firm that makes high-tech cutting tools for cars and planes; or John Chambers, Cisco’s chief executive, who has bought nine Israeli start-ups; or Steve Ballmer, who calls Microsoft “as much an Israeli company as an American company” because of the importance of its Israeli technologists.

“Google, Cisco, Microsoft, Intel, eBay . . .,” says one of eBay’s executives. “The best-kept secret is that we all live and die by the work of our Israeli teams.”

Israel is the world’s techno-nation. Civilian research-and-development expenditures run 4.5% of the gross domestic product - half-again the level of the U.S., Germany or South Korea - and venture-capital investment per capita is 2½ times that of the U.S. and six times that of the United Kingdom. Even in absolute terms, Israel has only the U.S - with more than 40 times the population - as a challenger.



As Messrs. Senor and Singer write: “Israel - a country of just 7.1 million people—attracted close to \$2 billion in venture capital [in 2008], as much as flowed to the U.K.’s 61 million citizens or the 145 million people living in Germany and France combined.” At the start of 2009, some 63 Israeli companies were listed on the Nasdaq, more than those of any other foreign country. Among the Israeli firms: Teva Pharmaceuticals, the world’s largest generic drug maker, with a market cap of \$48 billion; and Check Point Software Technologies, with a market cap of \$7 billion.

Such economic dynamism has occurred in the face of war, internal strife and rising animosity from other nations. During the six years following the bursting of the tech bubble in 2000, Israel suffered one of its worst periods of terrorist attacks and fought a second Lebanese war; and yet, as the authors note, its “share of the global venture capital market did not drop—it doubled, from 15 percent to 31 percent.”

One important question that “Start-Up Nation” raises is: Why Israel and not elsewhere? The authors—Mr. Senor, a foreign-policy official in the George W. Bush administration who now advises an investment fund, and Mr. Singer, a columnist for the Jerusalem Post—dispose, a bit too blithely, the argument from ethnic or religious exceptionalism, dismissing “unitary Jewishness” or even individual talent as major reasons for Israel’s high-tech success. (George Gilder, in a recent book treating some of the same matters, “The Israel Test,” disagrees: “Israel today concentrates the genius of the Jews.”)



Instead, Messrs. Senor and Singer point to a “classic cluster of the type Harvard professor Michael Porter has championed [and] Silicon Valley embodies”: the tight proximity of research universities, large firms and start-ups, a talent pool drawn from around the world, and an ecosystem of venture capital and military and other government R&D funding. In addition, they contend, Israel has a unique entrepreneurial culture that combines individualism, egalitarianism (a penchant for organizational flatness) and nurturing.

Where does this culture come from? Mainly, the Israeli military. “You have minimal guidance from the top,” Messrs. Senor and Singer write, “and are expected to improvise, even if this means breaking some rules. If you’re a junior officer, you call your higher-ups by their first names, and if you see them doing something wrong, you say so.”

High-school stand-outs are recruited into elite military units and trained intensively, with an emphasis on technology. When they’re done, everything required to launch a start-up “will be a phone call away. . . . Almost everyone can find some connection to whomever he or she needs to contact to get started.” Israel is a country, it seems, where everyone knows everyone.

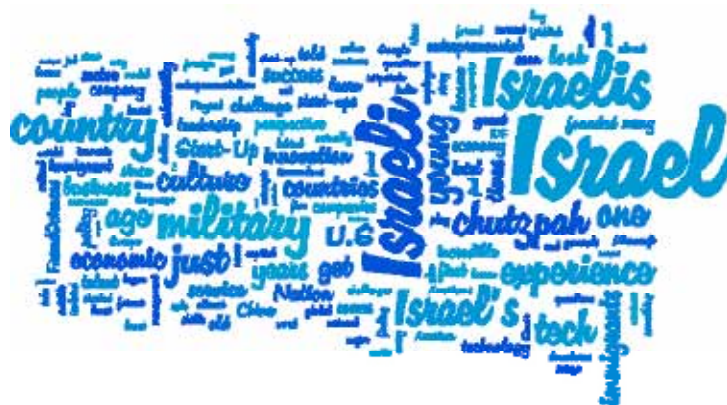
It is also a country with mandatory military service before college. For nations that want to emulate Israel’s start-up success, Messrs. Senor and Singer advocate similar mandatory service, military or otherwise, to get “something like the leadership, teamwork, and mission-oriented skills

and experience Israelis receive.” The trick is to combine what’s learned in the Israeli Defense Forces (or its non-defense equivalent elsewhere) with an almost abrasive individualism and the kind of self-reliance that occurs in a country that has to go it alone to survive.

The authors give relatively short shrift to economic policy. In a regulatory straitjacket and dominated by a state-run banking system, Israel suffered a “lost decade” from the mid-1970s to the mid-1980s. Messrs. Senor and Singer give appropriate credit to the reforms (like eliminating a ban on performance fees for hedge funds) initiated by Benjamin Netanyahu, now the prime minister, when he ran the finance ministry.

The greatest strength of “Start-Up Nation” is not analysis but anecdote. The authors tell vivid stories of entrepreneurial success, such as that of Shai Agassi, the son of an Iraqi immigrant to Israel, with his electric-automobile technology, now in the process of creating “Car 2.0”; or Gavriel Iddan, who got his start as a rocket scientist, with his pill cameras that explore the inside of the human body, founding Given Imaging in 2001, “the first company to go public on Wall Street after the 9/11 attacks.” In the end, it is not easy to discover why Israel, a tiny nation of immigrants torn by war, has managed to become the first technology nation.

It may be enough, as this fine book does, to shine a spotlight on its success.



Mr. Glassman is executive director of the George W. Bush Institute, a think tank that is part of the Bush Center in Dallas, which will include a library and museum.



Rethinking “Made in America”

Ron Kirk, U. S. Trade Representative, Washington, DC

Services such as insurance present an expanding trade opportunity, and the U.S. is leading the way. (Wall Street Journal, 4/17/12)

Ambassador Ron Kirk is the former mayor of Dallas and now the United States Trade Representative (USTR). He is a member of President Obama’s Cabinet and serves as the President’s principal trade advisor, negotiator, and spokesperson on trade issues.



Those critical talks will follow closely on the heels of a number of key engagements with America’s global trading partners, including last week’s Summit of the Americas, this week’s meetings of the G-20 trade ministers, and May’s Strategic and Economic Dialogue with China. In June, the trade ministers of the Asia-Pacific Economic Cooperation forum (APEC) will meet in Russia.

Ambassador Kirk brings both public service and private sector experience to USTR. He served two terms as the first African-American mayor of Dallas. Prior to becoming mayor, he served as Texas Secretary of State under Governor Ann Richards. In addition, Ambassador Kirk has practiced law as a partner in the international law firm Vinson & Elkins, LLP. He was named one of “The 50 Most Influential Minority Lawyers in America” by The National Law Journal in 2008.

Originally from Austin, Texas, Ambassador Kirk graduated from Austin College and earned his law degree at the University of Texas School of Law. Ambassador Kirk is married to Matrice Ellis-Kirk and they have two daughters.

Most people may think of Made-in-America exports as tangible goods such as heavy equipment and agricultural products, but the Obama administration has been seeking markets for American exports of all kinds—including services. The United States today is a services trading powerhouse, and it’s vital that we build on our already robust services surplus with dynamic new opportunities.

Next month, the U.S. will host the 12th round of negotiations in the Trans-Pacific Partnership.

In all of these fora, the U.S. will be seeking new avenues for American businesses to sell more of their products around the world, and to hire more workers in the services sector, which already accounts for four out of five American jobs.

The U.S. is the largest services trading country in the world, with \$1 trillion in two-way trade in 2011 and a services trade surplus last year of \$179 billion (up 23% from 2010). In what economist Bradford Jensen defines as the fastest-growing services sectors, Bureau of Economic Analysis data show that the U.S. in 2010 had a trade surplus of \$57 billion with the Asia-Pacific region, of \$44 billion with the European Union, of \$35 billion with the countries covered by the North American Free Trade Agreement (Canada and Mexico), and of \$25 billion with the rest of Latin America. America’s robust services exports reduced its overall trade deficit by 24% in 2010.

Much of America’s services success comes from the significant market-access provisions negotiated in our bilateral trade agreements. Because the U.S. has few barriers to the import of services, a huge benefit comes from provisions in new trade agreements providing American firms access to overseas services markets.

Just last month, for example, the U.S.-South Korea pact signed by President Obama entered



into force, opening South Korea's \$580 billion services market. Already American firms are benefiting in sectors ranging from legal services to information and communications technology. The Colombia and Panama agreements, both soon to be implemented, will open those countries' services markets wider as well.

The Obama administration believes the U.S. services sector can do even more business overseas.

A commitment to services exports is why services and investment are a cornerstone of the current nine-country Trans-Pacific Partnership negotiations, in which the U.S. is seeking broad, nondiscriminatory market access for a wide range of services.

We are also pushing to establish the fairness of competitive express-delivery markets, to set new e-commerce principles that would support electronic delivery of services without forcing

American providers to locate servers overseas, and to ensure that U.S. investors can use U.S. technology and aren't forced to favor another country's technology. We also worked during the recent visit of Chinese Vice President Xi Jinping to secure a commitment from China to open its market for American providers of automobile insurance.

The Obama administration is enforcing and asserting the rights of U.S. services providers around the world, from the September 2010 case we filed at the World Trade Organization to open China's electronic payment services market, to the agreement that Vice President Joe Biden struck in February on distribution services for high-quality American films in China.

Service industries are vital to U.S. economic growth and employment, so the Obama administration is working every day to ensure that services exports support more and more jobs here at home.



STEEP - POLITICAL

Our 2006 Town Hall featured the five "Foot STEEPS of Oklahoma" - a series of five cartoons depicting the foot imprints of Social, Technology, Environment, Economics and Politics. This "foot-STEEP" was for POLITICAL.



Lean Thinking “Made in America”

Stephen Benefield President and CEO of Choctaw Defense, McAlester

I remember a time, when I was a child in the 1970's, that I thought everything was made in America. Reflecting on this remembrance, after almost 50 years of life, I think about how times have changed.

As a child growing up in Ada, Oklahoma I was aware that my classmates' parents worked at all kinds of jobs and professions. Ada, I think, was typical of any prosperous smaller community in America.

We had a regional college and a great public school system, a large hospital and lots of doctors' offices. We had insurance agents, police and firemen (now firefighters), farmers, ranchers, teachers, factory workers, shop keepers, cooks and waiters, car salesmen, auto mechanics, gardeners, and housekeepers. We even had nuclear scientists at the Robert S. Kerr Research Laboratory, and I'm sure there were at least a couple rocket scientists at the local college!

My friend's parents did all kinds of jobs, and I couldn't tell you then that one job was any better than another. Everybody had a job to do in our little city.

In high school we started to see that some kids were more attracted to the auto body shop while others were cut out for the scholastic meets. Come graduation day it was time to go to work. For some though it was time for more school. Many of the now young adults decided to give college a try. The cost of college was steep, but most of my friends and I were able to find jobs to work our

way through the four years it took to get what my dad referred to as “The Magic Ticket” - the ticket to get your foot into a career that could sustain your family for a lifetime.

For those kids that weren't cut out for college there were plenty of other jobs. Usually the better paying jobs were those at the local factories. The factories were always looking for reliable people that would put in a solid day's work. In return, the factory jobs would trade your good work for a decent wage, health insurance, and a retirement plan.

The work was usually not very glamorous, but it was steady. You could plan a life around your

job. That steady job was good enough to help you qualify for a mortgage, take on a car loan, pay your tithes to the church, or keep the local bartender in tips, (depending on how ornery you were). There

was usually a pretty good chance that diligent work would allow you to move up the company ladder to a position that raised your family's standard of living.

These factory jobs were an essential part of the free enterprise system that we Americans invented. It helped us build the world's first middle class and raised our standard of living to heights our forefathers never imagined.

In Ada we had the Brockway Glass Factory, Ideal Cement Factory, Clopay Doors, Remington Arms, Forster Manufacturing, Bluebell Sewing Factory, and several machine shops that helped these factories stay humming.



Today, only Ideal Cement remains but is now owned by a Swiss conglomerate called Holcim.

The closing of factories across America has changed the economic landscape for an entire group of people who once staffed these operations. As I witnessed factory after factory close since the early 1980's I wondered – what will these people do?

What I've witnessed is that many of these former workers are underemployed working in service jobs or have found their way onto some form of public assistance with some probably making their living in an underground economy where taxes are seldom paid.

I was saddened by a statistic I saw recently that more Americans are applying for Social Security disability than are applying for unemployment benefits.

In some form or another, more Americans are receiving government assistance than at any time in our history. I've got to believe that a root cause of this is that the void created by these closed factories is devastating a class of workers that can no longer prosper in an economy that outsources their jobs.

I see young people graduating from high school with no other prospects than to go to college. It may seem cruel for me to point out that some of these kids have no business being in college. Some are seeking degrees that employers do not really need and borrowing money at an alarming rate to finance their education. Don't get me wrong. I am all for kids trying to get all of the education they

can – but at the expense of taking on an \$50k or \$100k education mortgage on their future?

Today I lead a manufacturing company that still makes things that people need. We engineer and design, machine and cut, weld and dip, and paint and assemble and we are proud to do so!

We operate in the realm of Defense Infrastructure Products, a manufacturing sector that America still leads. We design and manufacture highly engineered items such as the Improved Army Space Heater (IASH), USMC Medium Tactical Replacement Trailers, CAMEL II Potable Water Deliver systems, and Airfoils for the PAVEWAY Laser Guided Bomb.



Choctaw Defense Awarded Major U.S. Army Contract
Choctaw Nation of Oklahoma's military manufacturer to design, build Camel II water trailer in multi-year, multi-million dollar deal.

But we also produce relatively low-tech items like the 105 mm wooden ammunition crate and other military shipping and storage containers, and a variety of supply kits.

We operate our manufacturing plants in the rural S.E. Oklahoma towns of Antlers, Hugo, and

McAlester. We have a broad range of professional disciplines inside our company, but we also have many employees that would not be considered high skilled workers. These are the folks that belong to the group of disaffected workers that I have referred to.

These folks need the types of jobs created by low-tech and mid-tech manufacturing. Precisely the jobs that have been leaving our shores in search of cheap overseas labor for decades now. These jobs can provide an income derived from producing something that people need and can be a stepping-





stone for those achievers that want to improve and move up into higher skilled jobs. Without these type jobs many folks get trapped in the cycle of rural poverty that is taking over in many of our small towns in Oklahoma.

It is unlikely that we will ever again be the world's low cost producer of manufactured goods. We had our turn in this position already during the industrial revolution. Now this distinction goes to the multitude of current developing nations whose economies are best suited for this work.

If we can determine that it is a priority to secure these manufacturing jobs we need to reevaluate how this can be done. At what quality and price point are people willing to pay for "made in the USA"? I believe a piece of the solution is a rethinking of how we actually manufacture the goods to bring the right kind of value to the end users.

I am an advocate of Lean Manufacturing. Lean thinking companies systematically plan processes and procedures to eliminate waste and maximize throughput. Processes are simplified by organizing the workflow with mistake proof fixturing, clear concise work instructions, and a relentless dedication to continuous improvement. Lean organizations abhor waste and have a fierce dedication to excellence. A lean organization consistently meets or exceeds all of its core success measures. It invests its resources only where there is a clear financial advantage.

Lean transformations should be part of the solution.

We can design Lean factories that are laid out and planned around utilizing lower skilled labor in the most efficient way possible. With an amazingly efficient workflow designed using modern, Lean, efficient processes we could produce more product with less labor. We can build better products at lower cost while paying respectable wages.

The success organizations have experienced through Lean transformations is undeniable, but these examples are not common because so few companies have made the commitment to transform. Many reasons exist for this lack of action and may consist of:

- Not understanding the benefits of Lean thinking
- Not knowing what resources exist for assisting in the Lean transformation process
- Leadership not inspired to change
- Lack of benchmarking opportunities to visually experience examples of Lean workflows

As a policy influencing body, we should be thinking about how we can retain and expand our manufacturing base in our rural areas. Headwinds obviously exist but are not insurmountable. Lean thinking should have a place in the solution.

In 2009 Choctaw Defense sought the assistance of the Oklahoma Manufacturing Alliance to help guide the company with the implementation of Lean processes and principles. Choctaw Defense was recently awarded the Excellence in Innovation Award from the U.S. Department of Commerce, Manufacturing Extension Partnership.

Choctaw Defense's transformation into a "world class" Lean organization has resulted in astounding increases in manufacturing efficiencies that have made the company more profitable and has led to the expansion of business that has created more than 100 new jobs.



Export Nation 2012

Brookings Institution, reviewed by Martha Gregory, Oklahoma Academy Research Group, Tulsa

Export Nation 2012: How U.S. Metropolitan Areas Are Driving National Growth, Brookings Institution, March 2012. Reviewed by Martha Gregory, Oklahoma Academy Research Group

“Go Global - Start Local” is the recipe for growing international trade, per the Brookings Institution in a study released this year outlining their new paradigm for global economic growth. The secret ingredient is cities - export engines of the world.

Brookings studied exports and took a novel approach with the data. First, it focused on large metropolitan areas as points of origin and destination. Then, it measured trade by collecting data according to where hard goods are made instead of from where they are shipped, and by adding soft goods such as business services, education and tourism to the mix of what is counted. It followed trade down to the metropolitan level and published its findings in *Export Nation 2012*.

The Brookings study tells us that exports are driving the nation’s recovery and that those exports are being powered primarily by metros. Its unique approach of counting place of production and incorporating services took Brookings directly to the essential role of metros and how they link to other nations. The study gives us a richer and more inclusive measure of who produces what, from where and for whom.

The paradigm can be described this way. Population growth drives high densities into the largest cities. As individual metros grow and reach out to other metros, they differentiate themselves, create new products and services, and become catalysts for increasing levels of innovation. As trade accelerates, the payoff is jobs and revenue, which in turn feed back into the cycle to drive continuing economic growth. It is a bottom-up approach and it demands that government be an enabler to the process.

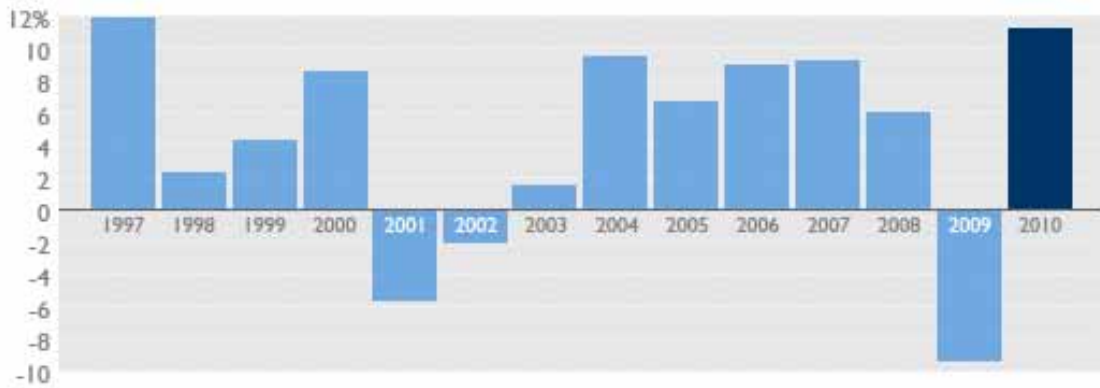
Study Findings

- U.S. exports lead the nation’s recovery.
- U.S. export sales grew by more than 11% in 2010, the fastest growth since 1997. Exports created jobs even as the overall economy was losing them. The number of U.S. total export-supported jobs increased by almost 6%.
- Large metropolitan areas power the nation’s export growth.
- Taken together, the largest 100 metro areas produced almost 65% of total U.S. export sales, 75% of the nation’s service export sales and 63% of manufacturing export sales in 2010. The majority of export sales came from metros in 30 states, among them Oklahoma.
- Manufacturing drives export growth.
- Manufacturing industries produced 75% of the nation’s additional sales abroad between 2009 and 2010. Eleven metros achieved growth rates that if continued would double their exports in five years.
- High-value-added service exports had strong growth through the recession and continue to have in the recovery.
- Exports such as education, telecommunications and business services grew in 2009-2010. The largest 100 metropolitan areas produced more than 75% of these high-value-added service exports.
- U.S. exports to developing countries are increasing.
- While Canada and Mexico are the largest export markets for the United States, share of U.S. exports going to Brazil, India and China increased by 5% in just the two years between 2008 and 2010. Metropolitan areas that produce what emerging markets consume are better-positioned to take advantage of the growth in those countries.



EXPORT GROWTH

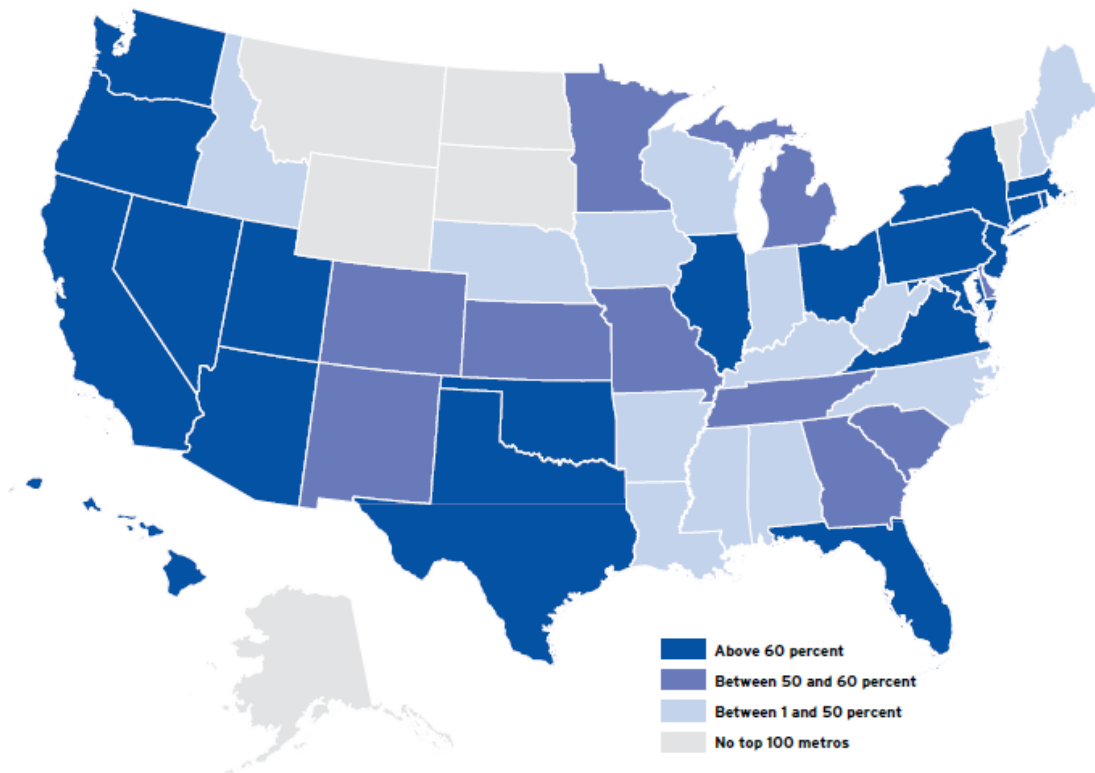
Year-over-year export growth, inflation adjusted, 1997-2010



Source: BEA National Income and Product Accounts (US Department of Commerce 2012)

METRO SHARE OF EXPORTS

Large Metro Area Exports as a Percentage of State Exports, 2010*



Note: *Large metropolitan areas rank among the largest 100 by population.

Source: Brookings analysis of data from BEA, BLS, IRS, Moody's Analytics, NAFSA and USITC

Policy Implications

Future international trade growth will come from metropolitan areas. The task of government and business leadership is to keep in place favorable conditions that enhance and support this growth, with sights set on metros, collaboration, and competition. Brookings lays out specifics.

- Friendly trade policies and open trade agreements
- Export financing through Ex-Im Bank and SBA
- Infrastructure construction and maintenance for improved trade
- Sharing among data collection agencies for better intelligence
- Industry and innovation cluster initiatives for best resource allocation
- Technology transfer from military application to private sector marketplace
- Support of trade missions at the metro level
- More U.S. Commercial Service staffing for next-tier emerging markets such as Colombia, Vietnam and Turkey
- More foreign trade counseling and training services for small and mid-sized exporters
- High profile national presence at global trade fairs as show of support for business
- Investment in R&D and innovation support programs
- Protection for the nation's intellectual property
- Support for STEM (Science, Technology, Engineering, Mathematics) education
- Immigration policies in place that support a capable and diverse workforce
- Collaborative arrangements between business and higher education
- Coalitions among local business, government and education at the metro level



Conclusion (from Export Nation 2012)

In a slow recovery, exports are essential to job creation and the reorientation of the U.S. economy towards productive economic growth. Metropolitan areas are a vital part of this proposition.

In 2010, exports were a major driver of the U.S. recovery and the largest metropolitan areas produced the majority of the nation's exports.

While the overall economy was still losing jobs, the rapid growth of U.S. export sales translated into 600,000 additional jobs in the first year of recovery.

These are jobs not only in the industries producing the exported goods and services, but also in the suppliers to the exporting industries, and in the case of merchandise exports, in the transportation and wholesale trade industries.

Manufacturing drove the rapid recovery of U.S. export sales, while some high-value-added service exports grew throughout the recession and recovery. In line with the rapid changes in the world economy, U.S. exporters increasingly targeted emerging markets as export destinations in 2010.

In sum, metropolitan areas in the United States will increasingly depend on sales abroad for their economic prosperity. The global economy is already a metro-driven network, across state and national borders.

Metros better integrated into this global network, especially those related to metros which are fast growing and rapidly increasing their consumption, are better positioned to endure these turbulent economic times.

And in so doing, they will help renew the American economy.



We Need More Private Sector Exports

Wes Watkins, Stillwater former Oklahoma Congressman

*Published July 6, 2012
The Oklahoman*

The United States has an economy worth about \$15 trillion and a domestic debt of more than \$16 trillion. If this economy were your house, you could say you were “under water.”

Furthermore, in the late 1970s we had a positive trade balance. Three decades later, the U.S. began having annual trade deficits of more than \$500 billion and became the largest debtor nation in the world.

What’s the solution to this problem? We can’t increase taxes enough without further depressing the economy. We can’t cut enough fat out of the budget without cutting into the muscle of Medicare, education, defense, etc. Tweaking the tax system or spending might help, but it wouldn’t be enough.

After the 1960s, we balanced the federal budget. Neither Democratic President Bill Clinton nor Republican House Speaker Newt Gingrich accomplished this. Rather, it was from an overflow of tax revenue from an explosive new sector of our private economy called “dot-com.”

Today a significant amount of the deficit could be reduced by becoming independent on our domestic energy production and from exporting goods and services from the other sectors of our economy.



The solution is to grow our gross domestic product more rapidly through the private-sector economy.

This will be difficult. The United States has only 4 percent of the world’s population. We can’t consume enough products. We must increase our exports to the 96 percent of the world’s population who live outside the U.S.

After World War II, we stood alone in the international marketplace.

Today we’re globally competitive with China, India, Russia, Japan, West Germany, Brazil and the Middle East. Have you noticed that it’s more difficult to bounce back from the recession? Economists are predicting only a 2.4 percent growth in the U.S. economy.

We must increase exports threefold over the next five years and by 20 times over the next 30 years to maintain our standard of living and to preserve our national security. This increase in exports can be achieved by private-sector enterprises — but only if there are positive government policies (with less-burdensome regulations) and a focused, proactive education system.

Just as I emphasized 25 years ago in my 1987 OSU commencement address, “International Trade — Opportunity or Destruction — which way, America?” two things are at stake: our standard of living and our national security.



The Governor's International Team

Steven Miller, PhD, Oklahoma State University, Stillwater

If the Oklahoma economy is to prosper in the 21st century, the business community must be quite active in the global economy. This involvement includes both export activity and the attraction of foreign-owned businesses to the state. Our recent performance in these areas has been strong. For example, 2011 Oklahoma exports exceeded \$6.2B with 22.5% of all manufacturing jobs being attributed to exports. Also, foreign direct investment (FDI) into Oklahoma currently provides employment for approximately 34,000 workers. Yet the global economic environment is ever-changing and we must continue to focus aggressively on international business opportunities.

One organization that strongly supports economic growth through international engagement is the Oklahoma Governor's International Team. The OKGIT is a non-profit organization of 45 members with the mission: *"Dedicated to a stronger Oklahoma in the global economy through business development supported by a climate of international focus by the general public, educational, and governmental sectors"*.

Some years ago, the OKGIT took the lead in a cooperative effort in designing an International Strategic Plan for Oklahoma. It included five goals associated with exporting, FDI, public support for globalization, workforce preparation and advocacy by federal, state, and local governments.

These goals are equally relevant today and the OKGIT membership reflects attention to them with representatives from the administrative and executive branches of state government, manufacturing and service industries, education, economic development, and international cultural groups.

Recently, the OKGIT membership was polled regarding international issues faced by Oklahoma businesses and how best to address them.

A few of the observations relevant to long term global success include:

1. *Businesses must recognize the importance of international involvement, build foreign relationships, become risk takers, assume long-term perspectives, and willingly adapt business strategies to the uniqueness of new markets.*
2. *Governmental organizations such as the Oklahoma Department of Commerce, Oklahoma Department of Agriculture, and the US DOC's Oklahoma International Trade office must be willing to assist businesses by providing international market information, personal consultation, and matchmaker activities both in foreign markets and when hosting foreign visitors to the state.*
3. *Access to Oklahoma-based International infrastructure service industries such as financial, legal and logistics needs to be increased.*
4. *The Oklahoma workforce, including current employees and K-16 students, need better appreciation of diverse cultures, foreign languages, and an understanding of foreign political and social environments, etc.*
5. *Foreign-based businesses considering investments in Oklahoma must be lead to understand the business location opportunities within the state and feel accepted by the communities under consideration.*
6. *Communities and the voting public need greater knowledge and acceptance of foreign environments as the foundation for acceptance of export business activities, support of governmental international initiatives, and think globally.*

Oklahoma can be proud of its current international successes. However, in line with the issues noted above, it is imperative for business, government, education, and non-profit organizations to cooperate in strengthening Oklahoma's position in the increasingly competitive global economy.



World Markets and Oklahoma Opportunity

Marcus Verner, U.S. International Trade Administration, Oklahoma City

Ninety-five percent of the world's consumers live outside of the U.S., with millions of these households entering the middle class each year. For many companies, this figure represents an enormous potential source of revenue. Businesses that export not only have access to more customers, but are better positioned to weather changes in their local market.

Currently, the export process is more streamlined than ever thanks to the Internet, improved transportation options, and the array of U.S. Government export/financing programs. The following steps provide a basic guide for companies looking to enter the global marketplace.

Step 1: Develop an Export Strategy

Creating an international business plan, i.e., an export plan, is important for defining your company's present status, internal goals and commitment. It is also required if you plan to seek export financing assistance. Preparing the plan in advance of potential export financing requests can save time and money. Export plans help companies clarify their strengths, decide how these strengths translate to sales, and outline measureable goals. Companies with plans are more likely to succeed over the long term and generally have customers in many different countries. Plans should be a few pages to start and can be expanded with gained experience.

How we can help: *There's no "one-size fits all" when it comes to creating an export plan. For example, new-to-export companies will usually find it easier to sell to countries such as Canada, or Mexico, before targeting more difficult and long distance markets such as China or Japan. Each year, hundreds of Oklahoma companies make locally and sell globally right here in Oklahoma. Our team includes a seamless web of 250 U.S. Commercial Service offices around the world (108 in U.S. cities), including locations in American embassies and consulates in nearly 80 countries.*

The value of our assistance is enhanced by our ability to tailor to the individual needs of that company. Basic value added export counseling is our bread and butter, but the scope can vary greatly along with the program and services needed for success. In 2011, Oklahoma exported more than \$6.2 Billion USD.

Step 2: Identify Your Market

Thorough market research is crucial to success. Understanding your export markets will give you vital information about how to manage your efforts. Initially, for most small businesses, three foreign markets will be more than enough. You may want to test one market and then move on to secondary markets as your experience develops.



Focusing on clusters of countries can also be more cost effective than choosing markets scattered around the globe. You must also consider several issues when you are thinking of selling overseas, including: what needs does your product satisfy? What products should be offered? Do you need to tailor your product or service? What specific services are necessary abroad at the presale and post sale stages? Are there certain risks/challenges associated with doing business in your target markets?

How we can help: *We've worked with companies who needed market-entry strategies for selling to, for example, Singapore, and Brazil, and helped others that were dealing with regulatory, documentation and customs issues in Europe and the Middle East. Sometimes these may involve export licenses for various types of products. We do market research on economic and industry trends in key sectors, much of which is available through our Country Commercial Guides and market research reports. All of these services save businesses time and resources when competing globally. Oklahoma's top exporting markets are Canada, Mexico, Japan, China, and Singapore.*



Step 3: Find Qualified Buyers

Most U.S. exporters simply take orders from abroad rather than vigorously marketing their products/services. They need to become “proactive,” and not just “reactive,” exporters.

How we can help: *Our goal is to help find qualified business partners, representatives, or end users in foreign markets. For example, we can provide customized meetings for U.S. businesses with prescreened businesses in those countries. We also support U.S. exhibitors at trade shows/events, conduct due diligence, and a host of other services.*

Step 4: Prepare Your Product for Export

Do you need to tailor your product/service to consumer preferences, industry standards, or the regulatory environment of that market?

How we can help: *We can provide customized market research on consumer and industry trends; we also have connections with key industry and trade associations that provide important market data.*

Step 5: Review Legal Considerations

You found a buyer, and your product is ready to export. What else do you need to know? Plenty. Are you legally able to sell your product to a specific country or buyer? What are your intellectual property rights?

How we can help: *We can guide you through the various export rules and regulations, and can help you understand the ways to protect your intellectual property before going to market.*

Step 6: Ship Your Product

Now that you’ve set a strategy for the market(s) to which you plan to sell, how are you going to get your products/services to that/those market(s)?

How we can help: *We can provide lists of local service providers (freight forwarders, translators, attorneys) and provide information on overseas customs requirements.*

Step 7: Receiving Payment

While paid is an important last step in the transaction, how payments will be made and under what terms should be negotiated upfront with the buyer. Keep in mind that each market and customer is different, and seldom does a one-size fits all approach work (e.g., payment in advance). What is most important is a strategy that minimizes risk of non-payment while maintaining competitiveness.

How we can help: *We work with numerous partners, including private sector banks and government agencies such as the Small Business Administration, U.S. Export-Import Bank, and other financial institutions that are experts in international financial transactions.*

U.S. Commercial Service Your Gateway to World Markets

As the trade promotion arm of the U.S. Department of Commerce’s International Trade Administration, the U.S. Commercial Service connects U.S. companies with international buyers through its global network of offices.

When I first began with the U.S. Commercial Service years ago, companies were much more reactive. Now, they want to initiate a game plan for selling internationally, and that’s where we come in. We also coordinate closely with other U.S. Government agencies and local partners such as the District Export Council, whose members provide guidance and mentoring to businesses learning to sell internationally.

Exporting doesn’t have to be burdensome or complicated, and it’s not just for larger companies—in fact the vast majority of companies we assist are small and medium-sized firms. If your company has a good track record of selling in the United States, one of the most open and competitive markets in the world, it’s likely a good potential candidate for making international sales. Let the U.S. Commercial Service help you get started or expand your markets.



Trade and Manufactured Products

Gordon Andersen, BAE, MBA, Pelco Products, Edmond

Pelco Products, Inc. is an Oklahoma based, family-owned business specializing in the design and manufacture of traffic signal hardware, utility products and decorative outdoor lighting. With over 260 employees, Pelco Products, Inc. is the largest traffic signal hardware manufacturer in the nation, selling products in all 50 states and multiple international markets.

BACKGROUND - MANUFACTURING

This state's manufacturing industry and the international exporting of state made goods have a major positive impact on Oklahoma's Gross State Product and, therefore, its economic well-being. As reported in the Summer 2011 SWOSU Center for Economic & Business Development

report: **Economic Impact of the Oklahoma Manufacturing Sector**, quoting the BEA from a referenced U.S. Department of Commerce report, every \$1 of final demand spent for a manufactured good generates \$0.55 of GDP in the manufacturing sector and \$0.45 of GSP in non-manufacturing sectors.

Manufacturing contributed the largest share (14.4% & \$17,269 million) of the Oklahoma's 2010 GSP which represented an increase of 11.1% from 2007 despite the recent economic turmoil in the economy. This increase was made possible by tremendous advances in manufacturing productivity. By comparison, the 'Real Estate, Rental and Leasing' sector closely followed the manufacturing sector, accounting for \$14,284 million in GSP, while the 'Mining' sector settled for third place, and contributed \$14,109 million in terms of GSP. The study, available on the State Chamber of Oklahoma web site, found that the economic impact of the manufacturing sector is

substantial and would compound exponentially into the future as it ripples through the regions and the state's economy. Below is a snapshot from the report of manufacturing's average economic impact on the statewide economy, 2011- 2031:

State Output	\$99.675 B
Gross State Product	\$41.826 B
Real Disposable Personal Income	\$27.077 B
Employment (jobs)	308,417

An export boom and strong inventories have placed manufacturing at the forefront of the economic recovery. From 2009 to 2010, Oklahoma's

*... our largest trading partner is Canada;
our largest export category is machinery;
our largest export region is Tulsa ...*

exports grew 21 percent, accounting for \$5.4 billion. The National Association of Manufacturers attributes 90% of Oklahoma's 2010

exports to manufacturers. From 2010 to 2011, Oklahoma's exports grew 16 percent, accounting for \$6.2 billion.

MANUFACTURING EXPORTS

The following information has been extracted from the document prepared by the Office of Trade and Industry Information, International Trade Administration, U.S. Department of Commerce and published as Oklahoma: Exports, Jobs, and Foreign Investment, June 2012.

Why Are Exports Important to Oklahoma?

Exports Support Jobs for Oklahoma's Workers:

Export-supported jobs linked to manufacturing account for an estimated 4.9 percent of Oklahoma's total private-sector employment. Nearly one-quarter (22.5 percent) of all manufacturing workers in Oklahoma depend on exports for their jobs (2009 data).



Exports Sustain Thousands of Oklahoma

Businesses: A total of 2,404 companies exported from Oklahoma locations in 2009. Of those, 2,044 (85 percent) were small and medium-sized enterprises (SME's) with fewer than 500 employees. *SME's generated nearly one-third (32 percent) of Oklahoma's total exports of merchandise in 2009.*

Foreign Investment Creates Jobs in Oklahoma:

In 2009, foreign-controlled companies employed 34,300 Oklahoma workers. Major sources of foreign investment in Oklahoma in 2009 included France, the United Kingdom, Canada, and Germany. Foreign investment in Oklahoma was responsible for 2.8 percent of the state's total private-industry employment in 2009.

What Markets Are Involved in Our Exports?

Oklahoma Depends on World Markets: Oklahoma's export shipments of merchandise in 2011 totaled \$6.2 billion. The state's largest market was Canada. Oklahoma posted merchandise exports of \$1.9 billion to Canada in 2011, 31.2 percent of the state's total merchandise exports. Canada was followed by Mexico (\$525 million), Japan (\$404 million), China (\$368 million), and Singapore (\$169 million).

The state's largest merchandise export category is machinery, which accounted for \$1.5 billion of Oklahoma's total merchandise exports in 2011. Other top merchandise exports are computers and electronic products (\$836 Million), transportation equipment (\$671 million), fabricated metal products (\$561 million), and food products (\$467 million).

Oklahoma's Metropolitan Exports

In 2010, the following metro areas in Oklahoma recorded merchandise exports: Tulsa (\$2.7 billion), Oklahoma City (\$1.2 billion), and Lawton (\$22 million). Another metropolitan area exporter that included some counties of Oklahoma was Fort Smith (including some counties in Arkansas as well) which exported \$414 million in merchandise.

In addition to the foregoing Commerce Department statistics, the National Association of Manufacturers, NAM, states that manufacturing accounted for 90 percent of Oklahoma's exports in 2010. Since 2003, Oklahoma's manufacturing exports grew 89 percent while the national average was a 70 percent increase. And, manufactured exports support 21 percent of Oklahoma's manufacturing jobs.

NAM has further reported that during the years 2008 – 2010, manufacturers in the U.S. sold \$70 billion more in manufactured goods to our free trade agreement (FTA) partners than we bought from them. But, the U.S. had a manufacturing trade deficit of \$1.3 trillion in countries where no FTAs existed. NAM states that America's exports and the related jobs could double if congress passes strong pro-export legislation.

WHAT THE FACTS SHOW

Manufacturing is alive, well, and a critically important contributor to the economic health and growth of Oklahoma, as well as throughout the United States.

A large percentage, roughly one-third of Oklahoma's total exports is from SMEs. An even larger percentage of the total number of Oklahoma companies engaged in exporting is SMEs at 85 percent.

GROWTH BARRIERS

With what can be termed a healthy exporting base among Oklahoma manufacturers, the question is: Are there impediments that manufacturers face, especially SMEs, which become barriers to exporting?

Answers to this question can be found in a July 2010 USITC (United States International Trade Commission) Publication 4169. That report examines the extent and composition of U.S. exports by small and medium-sized enterprises (SMEs) and factors that may disproportionately impede U.S. SME exports. And, a review of this reports findings shows that most barriers apply here in Oklahoma.



Impediments to Exporting Effectiveness
United States International Trade Commission

DOMESTIC BARRIERS

U.S. Government Regulation

- Export controls: they require too much paperwork and involve a lengthy, cumbersome, and costly process
- Difficulty obtaining U.S. visas—e.g., in order to bring foreign employees for training for sales, customer service, repair, etc., or to bring customers to view an SME's U.S. operations/product lines
- U.S. tariffs on imported intermediate inputs for U.S. products

Access to Finance

- Lack of financing for U.S. SME exporters, for both trade finance and working capital, particularly pre-shipment financing to cover big orders or orders for goods that take time to build
- Lending institutions' perception of SMEs as higher risk than larger firms
- Community banks' lack of familiarity with exporting

Transportation Costs

- Container shortages; containers are bottlenecked on the East Coast
- Port bottlenecks to access markets (e.g., having to ship through Houston, Miami, or Los Angeles for Latin American markets)
- Small scale of SME production
- Lack of economies of scale, which limits export potential
- Limited ability to supply large orders

FOREIGN BARRIERS

Foreign Government Regulation

- Varying labeling, certification, quality, and design requirements from country to country
- Costly sanitary and phytosanitary (SPS) regulations
- Inadequate protection of intellectual property (IP) and enforcement of IP laws
- Lengthy, opaque customs clearance procedures
- High foreign import tariffs and import restrictions such as quotas and bans

Knowledge of Foreign Markets

- Limited information to locate or analyze foreign markets
- Inability to contact potential overseas customers

Language and Cultural Barriers

- Limited ability to market effectively
- Limited ability to understand traditions



The barriers to exporting that were noted as the most important by U.S. SMEs at the Commission's public hearings and in written submissions and interviews for this investigation were similar to those that have already been identified by the (French) Organisation for Economic Co-operation and Development (OECD).

These included insufficient access to finance, complex and sometimes nontransparent domestic and foreign regulations, rising and unpredictable transportation costs, the small scale of SME production, tariff and nontariff barriers, time-consuming foreign customs procedures, language and cultural differences, and lack of knowledge of foreign markets.

The "Domestic Barriers and Foreign Barriers" from Table ES.2 from the above referenced USITC report "Summary of barriers to exporting and strategies to enhance exporting activities as reported by U.S. SMEs" is presented below. The source of these barriers is taken from hearing testimony, written submissions, e-mails, and interviews (in person and by phone) with USITC Commission staff. It is believed that the following also fairly represents the assessments of Oklahoma SMEs.

(SEE PRECEDING PAGE FOR LIST)

The presence of these barriers is a substantial challenge for SMEs and especially for the smaller firms where the costs associated with overcoming the barriers is relatively high compared to the SME's operating budget and manpower availability. Compared to the cost of sales made in the U.S., adding export sales carries greater overhead burden to overcome the barriers noted above.

As reported on May 18, 2012 by Kent Hoover, Washington Bureau Chief of The Business Journals by Kent Hoover, "more than 287,000 U.S. small businesses export, an impressive number but only a fraction of small businesses overall." In Oklahoma,

where there were 4,420 manufacturers in 2009, less than half of those were exporting and 85% of those were SMEs. With the current Oklahoma manufacturing employment at about 135,000 with about 4,400 manufacturers, the average number of employees per firm is slightly more than 30.

Therefore, for many SMEs, the added (barrier) costs of exporting over the standard costs of domestic business can be very significant. In his May 18 report, Mr. Hoover reported about a witness testifying at the House Small Business Committee hearing on the U.S. trade strategy for small exporters held the week of his report. The witness was Thomas Crafton, president of Thermcraft, Inc. in Winston Salem, N.C. which has around 70 employees and makes high-temperature customized equipment for manufacturers.

The following was Thermcraft's stated experience: *"We have export issues that arise on a daily basis and continue to be an ongoing struggle. For example, it can be difficult to get consistent and reliable information and help from the local representatives stationed abroad. ... Regulatory changes are constant, and the burden lies on us to keep up with those changes. ... There is a lack of a single source for info regarding export embargoes. They are listed across multiple web sites that take countless hours to research, and it is difficult to know if all requirements have been addressed.*

... We can't afford to hire a different person to handle each different export function like large multibillion-dollar corporations."

Kent Hoover went on to say that what Mr. Crafton lobbied for was that Government agencies that deal with exports need to coordinate their services and create an easily accessible database with information on all foreign trade requirements for each country.

Mr. Crafton's testimony is included in this document to reinforce several of the previously identified barriers for SMEs.



SUGGESTED STRATEGIES

The previously referenced USITC Publication 4169 suggested strategies for SMEs that were gleaned from hearings and testimonies and they included the following.

Pool Resources

- Work with other firms through trade associations or less formal coalitions for SMEs
- Work with larger firms, brokers, or agents that provide services such as financing and logistics

Use U.S. government programs

- Use Small Business Administration (SBA) guarantees and small business loans
- Use Ex-Im Bank to avoid having to use letters of credit
- Use U.S. Department of Agriculture (USDA) Market Access Program
- Use U.S. Commercial Service

CONCLUSION

The list of selected programs of U.S. government support for SME exporting activities from the USITC referenced report numbers just under 50; and, the Oklahoma Department of Commerce offers a like compendium of export assistance services. But these combined Federal and State programs are not presented, nor organized, in a manner permitting small SMEs to efficiently address their specific, but varied, export needs.

The state of Oklahoma must formally support all of its exporters, and especially manufacturing SMEs, by recognizing and accepting SME exporter importance to the overall economy. Continued and substantial future growth in SME manufactured exports will require specific actions by state and federal agencies to coordinate and improve existing export support programs. Those efforts should include developing both non-fee-based, as well as fee-based, services that assist SMEs in overcoming the recognized barriers to exporting as presented in this report.

New and innovative thinking and action in this area is needed to help manufacturing SMEs reduce their costs of becoming more involved in exporting.



STEEP - ECONOMIC

Our 2006 Town Hall featured the five "Foot STEEPS of Oklahoma" - a series of five cartoons depicting the foot imprints of Social, Technology, Environment, Economics and Politics. This "foot-STEEP" was for ECONOMIC.



Made in Marlow - Sold Globally

Brad Boles, President, Wilco Machine and Fab, Marlow

Brad Boles is president of Wilco Machine and Fab in Marlow. The third-generation family business was started by his grandfather 30 years ago and his father now serves as CEO.

From its headquarters in rural Oklahoma, Wilco Machine and Fab proves every day the world is flat. It is among a growing number of small and medium-sized manufacturers successfully conducting business across the globe.

The family-owned business operates factories in Marlow and Duncan that employ more than 400. While serving the oil and gas sector for the past 30 years, Wilco has built a reputation for high-quality ASME vessels and tanks, as well as bulk material-handling devices, energy services equipment and machined tools.

In spite of challenges, smaller manufacturing companies are gaining traction in global markets. Exports account for an increasing percentage of sales at these firms. A variety of technology and support has lowered the barriers to export markets over the past decade and Wilco moved quickly to take advantage of the evolving landscape.

Here at Wilco, there are a couple of essential keys to our success. Most importantly, we have stayed proactive during the weak economy. We have invested in business growth by identifying specific expansion opportunities. We continue to develop new products with an eye toward innovation and we maintain our strategic plan for the expansion of new markets - both domestic and overseas.

But we don't do it alone. Another key to our success is taking advantage of the numerous support agencies and programs available to Oklahoma companies. For us, the assistance comes from private and public sources and includes Red River Technology Center, Cameron University, Southwestern Oklahoma State University and

OSU's New Product Development Center. Over the years, Wilco has become a Gold Key member by utilizing the full range of market research and link services offered through the Oklahoma Department of Commerce.

About five years ago, the Oklahoma Manufacturing Alliance invited us to take part in a pilot project it was launching called ExporTech, which helps companies enter or expand into global markets.

It assists in the development of a customized international growth plan, which is vetted by experts and supported by a team of organizations that help companies move quickly beyond planning to actual export sales.

Unlike a static classroom environment, this course is customized to the needs of participants and produces a specific plan for each company. While we were one of the first, more than 40 Oklahoma companies have participated so far. The average company increases sales by nearly \$170,000.

Through the ExporTech program, Wilco implemented its plan and quickly developed relationships in the Middle East, Africa and South America. Company exports soon increased a dramatic six-fold. While domestic work is now dominating our business growth, the lessons learned still serve as a template as Wilco explores new markets and looks to expand through innovative products and services.

One area of recent emphasis at Wilco is compressed natural gas. Our Oklahoma expertise in CNG is rippling across continents and will have a dramatic effect on the world's energy sector.

Finally, it's important to credit much of our success to the work ethic and dedication found in our employees. They are drawn from our rural counties but their efforts now reach around the globe.



Trade and Oklahoma Agriculture

USDA Foreign Agricultural Service, September 2009

Oklahoma produces agricultural products that are exported worldwide. In 2008, the State's farm cash receipts totaled \$5.8 billion, and exports were an estimated \$1.6 billion. Agricultural exports help boost farm prices and income, while supporting about 18,532 jobs both on the farm and off the farm in food processing, storage, and transportation. Exports are increasingly important to Oklahoma's agricultural and statewide economy. Measured as exports divided by farm cash receipts, the State's reliance on agricultural exports was 27 percent in 2008. Oklahoma's top five ag exports in 2008 were:

<i>Wheat and products</i>	<i>\$860 million</i>
<i>Live animals and red meat</i>	<i>\$261 million</i>
<i>Cotton</i>	<i>\$96 million</i>
<i>Poultry and products</i>	<i>\$94 million</i>
<i>Feed grains and products</i>	<i>\$80 million</i>

World demand for these products is increasing, but so is competition among suppliers. If Oklahoma's farmers, ranchers, and food processors are to compete successfully for the export opportunities of the 21st century, they need fair trade and more open access to growing global markets.

Trade Agreements Benefit OK Agriculture

Oklahoma, the fifth largest wheat-producing state, benefited from limits set on subsidized wheat exports as a result of the Uruguay Round agreement. These limits influenced the European Union's decision to change its Common Agricultural Policy, ultimately lowering internal EU market prices to world price levels. As a result, annual EU wheat exports dropped from 22 million tons to about 14 million tons as lower market prices stimulated domestic use, and annual EU wheat imports jumped from 1.5 million tons to 7 million tons as the levied margin of protection fell. This translates to an 11-percent reduction in global export competition and a 5.5-million-ton



increase in EU imports, half of which is supplied by the United States.

Under the North American Free Trade Agreement, Mexico eliminated import licensing for wheat and is phasing out tariffs. Since 1994, average annual U.S. wheat exports to Mexico have more than tripled, from 23 million bushels to 85 million bushels, valued at \$349 million in 2002.

As one of the leading states in poultry production, Oklahoma benefited under the Uruguay Round agreement when Korea eliminated its import quotas on frozen chicken in 1997, and reduced its tariffs to between 18 to 20 percent by 2004. These steps supported a rise in U.S. poultry to 120,000 tons valued at \$79 million by 2002. The Philippines opened a tariff-rate quota for poultry meat of 16,701 tons in 1998, which rose to 23,500 tons by 2004.

Under the U.S.-Central America-Dominican Republic Free Trade Agreement (CAFTA-DR), all applied import tariffs on U.S. poultry meats that currently range between 30 and 164 percent will be eliminated over 10 to 18 years depending on the product and country. Each country also commits to adopting a "systems approach" to the recognition of the U.S. poultry inspection system, thereby eliminating plant-by-plant inspections and facilitating trade. From 2001 through 2003, U.S. poultry meat suppliers annually shipped on average 65,550 metric tons valued at \$61 million to all six countries combined.

Export Success Stories

The Oklahoma wheat industry has benefited from the efforts of the U.S. Wheat Associates to market U.S. hard red winter wheat to Nigeria. Currently 90 percent of this wheat variety imported into Nigeria comes from the United States.



Imports of Patriots

Editorial Board, Wall Street Journal

The horror, the horror. No, we aren't referring to those blue berets that U.S. athletes will wear at the opening Olympic ceremonies in London this month.



We mean the horrified reaction from American politicians that those uniforms are made in China. Someone should tell these folks that if you want to have exports, you also need imports. Olympic uniforms are an easy patriotic riff, but no doubt they were contracted to be made in China to save money. Where would you rather have the U.S. Olympic Committee spend its marginal dollars—on training for the athletes to win more medals, or on high-priced berets? What's the more patriotic decision?

More broadly, imports of all kinds drive American jobs and export competitiveness. Most goods imported by the U.S. are used to make other goods. The Washington-based Trade Partnership says that 62% of the \$2.2 trillion of imports in 2011 were inputs for producers.

These include oil, precious metals, minerals, green coffee and lumber. But the list also includes motor vehicle parts, semiconductors, aircraft engines and parts, steel products, fertilizers, plastics and machinery and other equipment. American companies buy these products, make other things with them or add value and then sell their output at home and abroad. If they can't buy these imports at good prices, U.S. producers can't compete globally. Protectionists portray imports as coming from Third World sweat shops that undercut American labor. But half of U.S. imports come from such developed countries as Canada, Japan and Germany. In 2011 imports from low-income countries amounted to less than 1% of our total.

Even finished goods imported by the U.S. often have a U.S. export component. Today's manufacturers, no matter where they are located, use an international supply chain that employs Americans. U.S. research, development and design—high-paying jobs—are behind much of what is made overseas.

And what about those Ralph Lauren-designed berets? Well, the American Apparel and Footwear Association says that while their industries are now dominated by imports, these two

markets in the U.S. employ more than four million people in everything from design to marketing, merchandising and retail. The International Trade Commission says more than half of the value of imported apparel sold in the U.S. is American. The Commerce Department says that more than 50% of direct importing operations in the U.S. are small businesses.

Imports also raise U.S. living standards. According to Cato Institute trade analyst Dan Ikenson, prices of many tradeable goods like electronics, toys, furniture and apparel in the U.S. have been dropping over the last decade even as the price of nontradeables like health care and education have increased sharply.

President Obama says he wants to double U.S. exports from 2009 to 2014, which makes sense even if the government will have little to do with it. As the U.S. Chamber of Commerce points out, 80% of the world's purchasing power is outside the U.S. along with 95% of consumers.

But this export boom won't happen if the U.S. doesn't keep its own markets open. Protectionism will impoverish our best customers. And there is a risk that trading partners will retaliate with their own new trade barriers. Both would be devastating for U.S. producers: Fast-growing middle-income countries like Mexico and China are also the fastest growing export markets for the U.S.

A half dozen Democratic Senators—led by Chuck Schumer, who else?—have introduced a bill to require that future uniforms be made in America. These are the same geniuses whose tax-and-spend policies make the U.S. economy less competitive. A country that worries about where its Olympic clothes are made has bigger competitive problems than those berets. (*Published July 16, 2012*).



U. S. Export - Import Bank

Robert Rubin and Vin Weber, Washington, DC

***The Ex-Im Bank Keeps Americans in Business
A government agency that increases U.S. jobs and
earns money for the Treasury deserves bipartisan
support. Source: Wall Street Journal, Mar 27, 2012***

Mr. Rubin is co-chairman of the Council on Foreign Relations and was secretary of the Treasury from 1995 to 1999. Mr. Weber is chairman of the National Endowment for Democracy and was a Republican member of Congress from Minnesota from 1982 to 1993.

We come from different parties and our views on the optimal role of government differ. But we both support the U.S. Export-Import Bank, which creates jobs, pays for itself, and reduces the deficit. Efforts now under way in Congress to block reauthorization of the bank's mission are misguided.

Ex-Im, an independent federal agency, provides export financing for American companies in foreign markets where commercial financing isn't readily available. Last year alone, Ex-Im financed \$32 billion in U.S. exports, sustaining 290,000 American jobs at more than 3,500 companies.

Because of the fees and interest it charges borrowers, the bank is self-sustaining. Since 2005, Ex-Im has returned \$1.9B to the U.S. Treasury.

Over the last two years, U.S. exports have grown annually at 15.6%. At this rate exports are on track to double within five years. That's an economic accomplishment both parties can be proud of. Despite that good news, within the next 90 days Ex-Im will likely reach its \$100 billion loan portfolio cap and will have its current authorization expire. Should that happen, Ex-Im will no longer be able to finance U.S. exporters.

Since its inception in 1934, the bank has played a critical role in making sure American exports reach markets around the world. In the aftermath of World War II, Ex-Im financed the Marshall Plan, which helped rebuild a healthy and vibrant economy in Europe. In Asia, Ex-Im financing built the Burma Road, which opened trade throughout the region, and it was Ex-Im financing that made the Pan American highway possible, connecting trade in North and South America.

Over its 78-year history, the bank's loan losses have averaged about 1.5% per year, a very good track record.



*Export-Import Bank
President Fred Hochberg*

Bank critics believe Ex-Im is corporate welfare. We disagree. The large companies that use Ex-Im financing—Boeing, GE, Caterpillar and others—compete in a global marketplace in which foreign companies and their governments systematically use export credit financing.

In practice, a Chinese locomotive company can offer government export financing to international buyers, which makes their trains less expensive in foreign markets such as Pakistan.

When an American company, such as GE, is competing for that locomotive sale it ought to be able to provide comparable financing for its locomotives. Such policies ensure a level playing field for American companies in an increasingly competitive global marketplace.

Small and medium-size companies seeking international sales face even greater export challenges. Last year alone, the Export-Import Bank supported \$6 billion in loans to small businesses, accounting for 87% of Ex-Im transactions.



Export credit financing provides consistent, reliable access to capital in challenging market conditions. The financial crisis of 2008 is a perfect example. As global financial markets contracted, Ex-Im financing expanded, thereby ensuring that U.S. exporters could still reach foreign markets.

Some critics believe that export credit financing distorts free markets, when in fact the opposite is true. Export credit financing is designed precisely to ensure that U.S. goods and services can compete on price and quality.

We believe markets should determine the price in accordance with supply and demand, but the reality is that governments around the world provide export financing for certain industries. Increasingly, U.S. firms are at a competitive

disadvantage globally. The U.S. is working to develop international trade-finance agreements that would require that all countries play by the same rules. But we're not there yet, and reducing our global economic footprint would have profoundly negative consequences for American jobs and competitiveness. President Obama has called for increased enforcement of trade agreements and has directed the Ex-Im Bank to provide financing to U.S. firms that face unfair export credit financing provided by other governments.

Congress has legislation before it to pass a full four-year reauthorization and increase the bank's exposure cap to an appropriate level. A government agency that increases U.S. jobs, pays for itself, and earns money for the Treasury is surely worthy of strong, bipartisan support.



STEEP - SOCIAL

Our 2006 Town Hall featured the five "Foot STEEPS of Oklahoma" - a series of five cartoons depicting the foot imprints of Social, Technology, Environment, Economics and Politics. This "foot-STEEP" was for SOCIAL.



Direct Investment in the United States

Tazeem Pasha, Select USA, Washington, DC

The United States reaffirms our open investment policy, a commitment to treat all investors in a fair and equitable manner under the law, and I encourage all countries to pursue such a policy. My Administration is committed to ensuring that the United States continues to be the most attractive place for businesses to locate, invest, grow, and create jobs. We encourage and support business investment from sources both at home and abroad. – Barack Obama, President of the United States, June 2011

Businesses worldwide invest in the United States to access the world's largest, most innovative economy. With globally recognized educational institutions, growing industry clusters, first-class research and development centers, and access to global markets, the United States offers an unmatched opportunity for success.

With the creation of SelectUSA as a White House initiative to promote business investment, the national focus on the growth of domestic and foreign direct investment in the United States is unprecedented. SelectUSA can help firms looking to enter, expand, or return their operations to the U.S. market.

Even with global economic volatility in recent years, foreign direct investment (FDI) in the United States has remained steady. More than \$220 billion in FDI flowed into the United States in 2010, a 30 percent increase from 2009. Overall, the \$2.3 trillion stock of FDI in the United States is equivalent to nearly 16 percent of U.S. GDP. And the United States consistently ranks among the top countries in the world in numerous confidence measures.

Given the sheer size and diversity of the U.S. economy, its ability to offer a stable, predictable, investment climate to domestic and international businesses is unparalleled. While 2011 is poised to see an overall decline in cross-border direct investments, firms that have or are planning to

invest in the U.S. market continue to enjoy a stable economic climate.

The United States has always welcomed FDI because it contributes substantially to the U.S. economy. Subsidiaries of foreign-owned firms directly employed over 5.2 million American workers in 2009, paying \$408 billion in annual salaries and wages. Multinational firms value U.S. education and training and invest in specialized functions that lead to U.S. job creation in highly specialized sectors.

They want the best workers in the world and are willing to pay a premium for American talent: nearly 40 percent of U.S. jobs created through FDI are in manufacturing, and U.S. employees of foreign-owned firms earn 25 percent higher wages than the average U.S. private sector worker.

Investors choose to conduct their valuable, proprietary activities in America because those activities are not viable without skilled and creative workers, innovative industry clusters, strong protections for intellectual property, and a predictable governance framework. The Battelle Memorial Institute tells us that 34 percent of all global research and development in 2010 took place in the United States, with almost half of the developed world's researchers working in the United States.

According to research by the National Science Foundation, the U.S. Census Bureau, and the U.S. Bureau of Economic Analysis, foreign firms have a growing share of research and development investment in the United States. These firms recognize the hospitable climate the U.S. provides for their product development, innovation, and commercialization efforts. The United States provides a world-class framework for safeguarding and growing such investments.

FDI's impact on the U.S. economy transcends its borders. In addition to introducing new capital,



creating new jobs, and strengthening U.S. competitiveness, U.S. affiliates of foreign-owned firms accounted for almost 19 percent of total U.S. exports in 2009. In recent years, the steady rise in the proportion of U.S. exports originating from these firms is evidence that multinational companies locate in America not only to service the U.S. market but to maximize the opportunities presented by its export platform.

According to the Office of the U.S. Trade Representative (USTR), the United States more than doubles its market access through strategic trade agreements that connect its businesses with nearly 695 million consumers worldwide. With the recent approval of free trade agreements with Columbia, Panama, and South Korea, global access afforded to a company with U.S. operations is unprecedented.

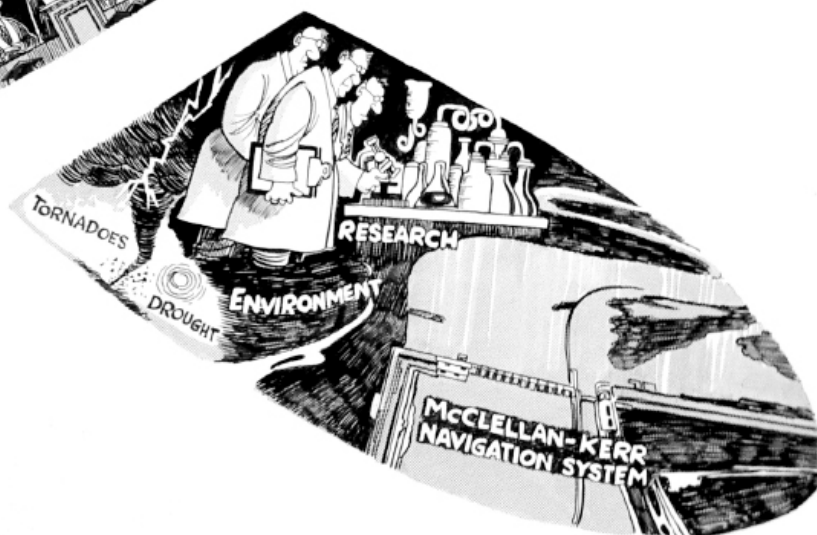
U.S. states, regions and cities have a strong legacy of pursuing and winning business investment projects. With SelectUSA, their efforts are supported at the national level now more than ever. Just a week after creating SelectUSA,

President Obama released a statement on America's unequivocal policy of openness to investment.

For economic development organizations and firms, SelectUSA is a federal resource to provide research and information; identify federal, state, regional, and industry partnerships; respond to investment impediments involving federal rules and regulations; and advocate for U.S. economic competitiveness through global business investment. SelectUSA represents the entire nation and exercises strict geographic neutrality.

Cross-border investment is a pivotal component of U.S. economic competitiveness. With SelectUSA, the federal government is a partner to U.S. states, regions, and cities in welcoming business investment to America.

** Established by Executive Order of the President in June 2011, SelectUSA is a government-wide initiative to encourage, facilitate and accelerate business investment in the United States by both domestic and foreign firms. SelectUSA can assist firms and economic development organizations that are engaged in business investment in the U.S. market. To learn more, visit www.SelectUSA.gov.*



STEEP - TECHNOLOGY

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Section 5

Private Sector



Oklahoma's Intellectual Property

Paul E. Rossler, Nicole V. Gonzalez & Lori Sears, Gable Gotwals Counsel, Tulsa

Editor Note

This paper is significantly footnoted. The footnote text is omitted here but available upon request.

This paper outlines the economic impact of intellectual property, provides an overview of the level of innovation in Oklahoma, and discusses the impacts of non-resident intellectual property.

Positive Economic Impacts

Intellectual property refers to a set of rights that arise from intellectual, scientific, or artistic creations, such as designs, inventions, and literary and artistic works, and in the form of symbols, names, and images, such as product and service brands. (See last page, Keeping “IP” Straight, for a brief overview of the various types of intellectual property.)

Intellectual property accounts for about 45% of GDP¹ and is considered to be the “lifeblood” of the U.S. economy.² Industries that rely on intellectual property protection employ about 18 million Americans and account for over half of all U.S. exports and 40% of U.S. economic growth.³ And intellectual-property-intensive industries tend to create higher paying jobs and more jobs faster than non-intellectual-property-intensive industries.⁴

We found no evidence that the contribution of intellectual property to Oklahoma's economy is any less significant than the role played by intellectual property in national economies. State governmental policies and practices that create conditions which are conducive to the creation of new ideas and technologies, and the protection of intellectual property rights contained within such ideas and technologies, are in Oklahoma's best interests.

Oklahoma Is An Innovative State

Oklahoma businesses encompass aerospace, energy, healthcare and life sciences, manufacturing, and software industries. However, getting reliable statistics on the value of Oklahoma-based

intellectual property is difficult, but some rough indicators are available as to the overall amount of Oklahoma innovation. One indicator is the number of U.S. patents being granted which had an Oklahoman named as the “first-named inventor.”⁵

On this indicator, Oklahoma ranks 24th among the states, with an average of about 480 issued patents per year between 1999 and 2011.⁶ Given that Oklahoma ranks 28th in resident population⁷, this level of patent performance suggests that Oklahoma outperforms in this area. Between 2006 and 2010, about 2,300 patents were granted which had an Oklahoman as a first-named inventor on the patent, and of those patents, about 90% came from eleven Oklahoma counties.⁸

Patent performance might be constrained because Oklahoma is a state dominated by small businesses.⁹ The costs associated with seeking patent protection can easily exceed the budget of a small business or an independent inventor. For example, in the central U.S., it's not unusual for a patent to cost \$10,000 or more to obtain.¹⁰ Additionally, we have found some small businesses and independent inventors are guided by misconceptions about what is patentable, what constitutes patent infringement, and how to monetize patents (and intellectual property rights in general). Some common misconceptions are an invention must be at least 20% different than current products in order for it to be patentable, that a patent cannot be infringed unless the invention is sold, and that patent protection does not have any economic benefit.

Another indicator of innovation is entrepreneurial activity as measured by the number of residents starting a new business.¹¹ The Kaufmann Foundation ranked Oklahoma's entrepreneurial activity - 210 per 100,000 adults creating businesses each month - 45th among U.S. states and the District of Columbia.¹² However, a 2012 survey by Thumbtack.com (in partnership with the Kaufmann Foundation) ranked Oklahoma as one of the four best states in which to start a business.



¹³ That survey ranked Oklahoma City as one of the top performing cities for entrepreneurship ¹⁴ and Tulsa has an extensive “ecosystem” to support entrepreneurship. ¹⁵ The data suggest that Oklahoma has considerable entrepreneurial potential and is well positioned to realize that potential.

Regardless of the level of innovation, the ability to exploit the intellectual property rights resulting from that innovation is important. In this respect, Oklahoma appears to experience “patent drain.” During the ten-year period 2002 to 2011, about two-thirds of the patents having an Oklahoman named as first inventor were assigned to individuals or business entities listing Oklahoma as the state of residence. This leaves the remaining one-third potentially being assigned to non-Oklahoma business entities. ¹⁶

To Tax or Not Tax Intellectual Property?

Intellectual property is a form of “intangible property” and Article 10, Section 6A, of the Oklahoma Constitution exempts some intangible personal property from ad valorem property taxation. However, intellectual property rights are not listed in Section 6A and a 2009 Oklahoma Supreme Court ruling has left open the possibility of those rights being subject to tax. ¹⁷ State Question 766, which is on the ballot for November, would, if passed, ensure that intellectual property rights and other types of intangible property could not be taxed. ¹⁸ If voters decide to not pass SQ 766, then intellectual property could be subject to tax.

The Influx of Foreign Intellectual Property

For the first time in its history, the U.S. Patent Office granted more patents on applications of “foreign origin” than it did to those of U.S. origin. ¹⁹ During the previous three calendar years, half of the patents granted by the Office came from applications of foreign origin. The

amount of foreign origin patents in the U.S. has been increasing ever since the 1970s, when patents of foreign origin represented about one-third of all U.S. patents granted. To date, seven countries represent a little over 80% of the total foreign origin filings, with the largest filer being Japan, followed by Germany, United Kingdom, France, Canada, Taiwan, and South Korea. ²⁰ In 2011, China was just behind this group in the number of filings. ²¹ China’s national government believes that intellectual property is so important to economic prosperity that “[f] or some patents the government pays cash bonuses; for others it covers the substantial cost of filing. Corporate income tax can be cut from 25% to 15% for firms that file many patents.” ²²

Summary

State governmental policies and practices that create conditions which are conducive to the creation of new ideas and technologies are in Oklahoma’s best interests. Oklahoma is an innovative state, has considerable entrepreneurial potential, and is well positioned to realize that potential. Passing SQ 766 could further facilitate this, as can the major universities’ emphasis on intellectual property rights.

The filing activity and trends seen in the U.S. are also seen in the Patent Cooperation Treaty (“PCT”) patent system, of which the U.S. and 143 other countries are members. The World Intellectual Property Office reports that the U.S., Japan, Germany, and China remain the biggest users of the PCT system and that PCT applications from Japan and China are up about 20% and 30% ²³ respectively. The U.S. recorded an 8% increase. With respect to the technology areas represented by these filings, no one technology area dominates, but digital communications, electronic machinery, medical technology, and computer technology represent the largest share of the total, with each accounting for 6 to 7% of the total filings. ²⁴

Worldwide, the top 50 university users of the PCT system file on average between 40 and 300 PCT applications each year. ²⁵ The University of Oklahoma and Oklahoma State University are averaging about five PCT applications per year; the University of Tulsa averages less than one per year. ²⁶ However, the Oklahoma universities are emphasizing patents, intellectual property rights, and startups. ²⁷



Keeping Intellectual Property Straight
P. Rossler, Keeping IP Straight, WhatsUpInIP.com

TYPE AND NOTICE	SUBJECT MATTER	PROTECT AGAINST	TERM OF PROTECTION
Trade Secret "Confidential" "Proprietary"	Any information (including an idea, formula, process, apparatus, machine & composition) not generally known, of economic value, & reasonable steps taken to protect	Misappropriation of the information but not against independent discovery or legitimate reverse engineering	Lasts as long as information remains not generally known & reasonable steps taken to protect its secrecy
Patent Pat. Pend. (patent application is on file) Pat. (patent has been issued)	New, inventive & useful process, apparatus, machine or composition New & inventive visual, ornamental look or shape of an article of manufacture	Unauthorized using, making, selling, or importing the patented invention or design	For "utility" patents, 20 years from the filing date of the patent application For "design" patents, 14 years from the issue date of the patent
Copyright © or Copr.	Work of authorship that has "creative expression" which has been "fixed in a tangible medium" (e.g. written down, recorded)	Copying (substantial similarity & amount) of the creative expression but not against independent creation or "fair use" of the creative expression.	Life of author + 70 years
Trademark TM (trademark), SM (service mark) or ® (federally registered mark)	Word or logo used "in connection with" a good or service & indicating the source of that good or service	Others trading off on the trademark owner's goodwill by using a "confusingly similar" mark so that the public is likely to think the others' goods or services are the trademark owner's	Lasts as long as the trademark is used in commerce
Trade name	Name used in conducting business with others	Others trading off on the trade name owner's goodwill by using a confusingly similar trade name	Similar to trademark
Trade dress	Non-functional look and feel of a good or service & indicating the source of the good or service	Others trading off on the trade dress owner's goodwill by using a confusingly similar trade dress	Similar to trademark
Domain name	Name or string of characters used to identify a web site	Others using an identical or confusingly similar domain name to the trademark "in bad faith"	Lasts as long as domain name remains registered (&/or trademark remains in use)
Right of publicity	Person's name, image or likeness	Others commercial use of the name, image or likeness without permission to do so	Determined by state law but typically lasts during the person's life and (sometimes) after their death

Impacts of Negative Perceptions

Cynthia Reid, Vice President, Greater Oklahoma City Chamber

Meet Cynthia Reid

Cynthia Reid is the Vice President of Marketing and Communications for the Greater Oklahoma City Chamber and has been a communications professional for more than 20 years.



As head of Marketing and Communications for the Chamber, she oversees national and regional marketing initiatives to promote Oklahoma City for economic development and tourism. She is also responsible for events, media relations, publications and image branding for the Chamber.

During her years with the Chamber, Cynthia's leadership has been instrumental in marketing and branding efforts. She helped lead landmark campaigns, including MAPS 3 and the Big League City campaign that helped bring the Thunder to Oklahoma City; along with numerous successful county, city and school bond campaigns.

Reid joined the staff of the Chamber in 1989 and held various positions before leaving to become the Director of Communications for Oklahoma City Public Schools, a position she held until July of 2000 when she rejoined the Chamber. She was named Vice President in May of 2004.

Reid currently serves on the board of the Oklahoma City Arts Council and is a graduate of Leadership Oklahoma City, class 17.

A graduate of Oklahoma City University, with a BA in Mass Communications, she is married to John Reid and they have one daughter, Chloe.

“Dull,” “boring,” and “oppressive” are not words you want to hear in connection with your metropolitan area. Unfortunately, those are the exact words people are using to describe Oklahoma City.” Cynthia Reid

In 2010, the Greater Oklahoma City Chamber commissioned a study that looked at people's attitudes toward working and living in Oklahoma City. Nearly 1,000 site selection consultants, large business executives and employees were surveyed as part of a Site Relocation Attitudinal Study. The results were shockingly negative, with many of the respondents viewing Oklahoma City as dull, and lacking in culture and diversity.

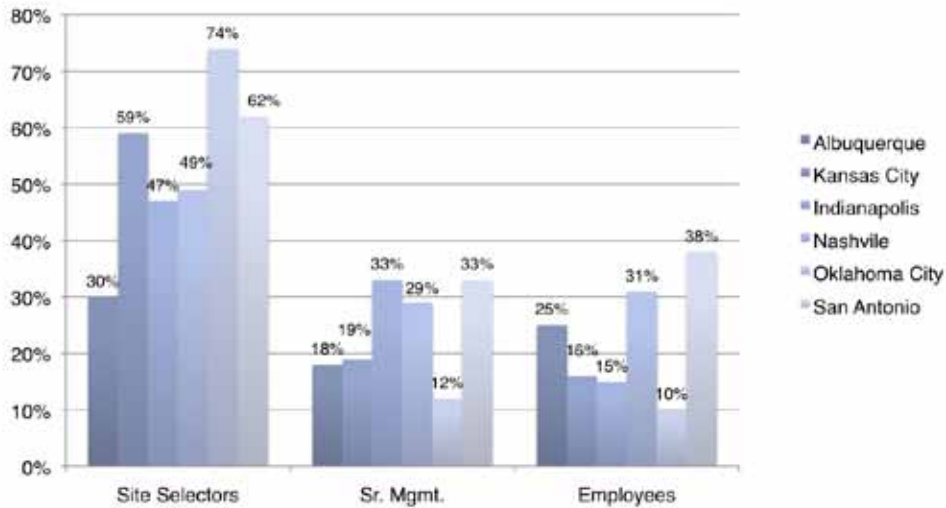
Unfortunately attitudes such as these must be evaluated and addressed – they can have tangible, negative, concrete ramifications on business relocation and expansion opportunities.

The respondents were asked to look at Oklahoma City as compared to five other similar metropolitan areas: Albuquerque, N.M.; Indianapolis; Kansas City, MO.; Nashville, TN.; and San Antonio. Their responses were then compared to a similar study completed in 2007.

Of the three groups, site selectors ranked Oklahoma City the highest. They praised the city as an excellent location for business, and ranked it first among the cities. This is a jump from 2007, when they ranked Oklahoma City last. The dramatic shift in their perceptions can be attributed to a targeted marketing campaign aimed at this group over the three years between the studies.

It's a far different story, however, for senior managers and employees. Both of these groups ranked Oklahoma City dead last among the six cities. Only 12 percent of senior managers and 10 percent of employees gave Oklahoma City an overall rating of 8, 9, or 10. Many of the comments





that accompanied their responses were startlingly severe: “You could not pay me enough to live in Oklahoma City,” said one respondent. “Someone putting a gun to my head would make me want to move there. The only way it would be better than other markets is if it didn’t exist at all,” said another. There is no denying that employees and managers who feel this strongly are sure to sway the actions of their site selection consultants.

Shifting perceptions is a long term process, and it isn’t easy. The site selectors’ change in attitude was a result of a large marketing campaign, which aimed to change the perceptions of Oklahoma City as a destination for new business.

After three years of concerted effort between 2007 and 2010, 74 percent of site selectors rated Oklahoma City as a strong place to live or work, placing it above San Antonio (62 percent), Kansas City (59), Nashville (49), Indianapolis (47) and Albuquerque (30). In fact, site selectors said they were impressed with the city across the board, in factors ranging from a pro-business environment to quality of life.

One site selectors said, “OKC has a well-trained, diverse labor force that can provide the needs of most companies. The training programs at local

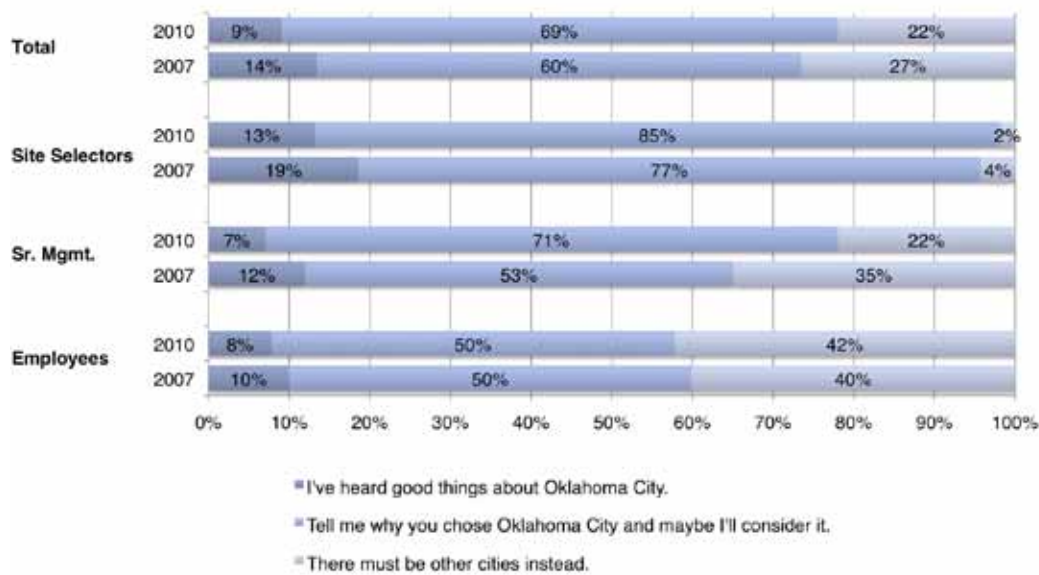
schools turn out skilled workers. The large military base offers a continuous supply of additional skilled labor. The business climate is excellent. The labor-relations atmosphere is good. Incentive programs are very competitive nationally and applicable to most operations.”

Oklahoma City fared well in many of the aspects that site selectors consider crucial for business relocation: favorable cost of operations, ample supply of skilled and trainable labor, a pro-business environment and state and local incentives. The shift in attitude from the site selector group is a perfect example of successful targeted marketing.

When comparing the attitudes of senior managers and employees between the 2007 and 2010 studies, there was little to no change. When faced with a hypothetical situation in which their company might relocate to Oklahoma City. Only 9 percent chose “I’ve heard good things about Oklahoma City,” while 22 percent said “There must be other cities instead.”

Senior managers gave Oklahoma City decent rankings in several economic factors such as cost of labor and overall cost of doing business, but were harsh in their assessment of the quality of life aspects.





In fact, several mentioned that it would be difficult to persuade talented people to relocate here, with only 7 percent saying such a relocation would be “somewhat easy.”

The employees all rated quality of life and an appealing community as important, but very few of them saw Oklahoma City as having either of these things. Less than 20 percent ranked Oklahoma City as an 8, 9, or 10 in quality of life areas. Despite a few positive comments, comments such as “A dull, dull place to live and work,” and “Nothing to do. Boring. Bad weather,” were common.

So where are these perceptions originating? Some can be attributed to sensationalized news stories that focus on hot-button legislation in Oklahoma or

exaggerated weather issues. But the research found that many of the negative opinions were based on little to no information. In fact, the study found that many of the people in the study had never been to Oklahoma City. Of those who had, many were positive about it. The more information people have, the more favorable their reaction.

In the end, such dismal perceptions come with an economic price. If site selectors cannot persuade their clients to relocate to Oklahoma City because of inherent negative perceptions, then they will be forced to look elsewhere. There is a clear disconnect between what Oklahoma City has to offer and how it is perceived, and targeted marketing efforts are desperately needed.



Oklahoma Energy Today and Tomorrow

Steven Agee, PhD, and Russell Evans, PhD, Oklahoma City University

Steven C. Agee, Ph.D. is the Dean and Professor of Economics at the Meinders School of Business of Oklahoma City University. Russell Evans, Ph. D is the Executive Director, Steven C. Agee Economic Research and Policy Institute at Oklahoma City University. His undergraduate and graduate degrees are from OSU and both in economics.

Oklahoma Energy

Oklahoma continues to play a key role in the nation's energy supplies, ranking fifth in the nation in oil production and fourth in natural gas production. Active rig counts across the state are at their highest levels since the recession gave way to recovery. The Continental Resources relocation, Devon Tower completion, Sandridge Energy renovation, and Chesapeake campus expansion all serve as daily reminders of the expansion of the industry.

While employment and income growth are strong in the industry, both for wage and salary employees and the self-employed, the industry, and its future impact on Oklahoma, is not without concern.

Oklahoma Energy Today

Insufficient pipeline and distribution infrastructure development have left new fields of extraction severely restricted or completely disconnected from their end users. In a throwback to decades past, crude oil from the Bakken Shale in North Dakota is being trucked and railed to refineries in the upper Midwest and east coast. Extraction from existing fields is funneled through Cushing, where bottlenecks in the delivery process have more than tripled oil stocks since 2008.

The result has been a domestic crude oil price that is significantly lower than its comparative international Brent crude price, leaving Oklahoma producers selling their product at a discount of nearly 20 percent relative to global markets. Likewise, increased natural gas field production combined with an unseasonably warm winter, which drove the working storage of natural gas to its highest level in recent years, have effectively propelled natural gas prices to 10-year lows. The stress of low natural gas prices on the income and balance sheets of producers is undeniable, but the future need not be grim.

Growth in large sections of the developing world will continue to demand access to energy, and technologically sophisticated recovery efforts

of unconventional resource fields will supply the market. The paradigm of the industry is shifting from exploration to optimal extraction, the result of which is expected to be an ebb and flow of prices in a tighter bandwidth and steady demand stimulating growth in the industry. The next 10 years will

undoubtedly look different than the last 10 years for the industry, but it should be a productive 10 years nonetheless.

State/Local Impacts in Oklahoma

At both the state and local level, the industry continues to serve as the most defining industry.

A recent study completed for the Oklahoma Energy Resources Board by the Meinders School of Business found that the industry accounts directly for over 83,000 jobs in the state with an average



labor income (compensation plus benefits) of more than \$113,000 per year. Activity in the industry is tightly linked to local production in other industries and generates significant spillover impacts.

In total, the industry directly or indirectly accounts for over \$50 billion dollars of our gross state product and over 344,000 state jobs. Fiscal impacts are just as impressive, with the industry accounting for an estimated \$700 million in state personal income tax collections, \$563 million in state sales tax collections, and another \$503 million in sales tax collections to local governments across the state.

Longer term impacts of the energy industry on the state's economy depend crucially on makeup of energy markets in decades ahead. All markets are characterized by the interaction of consumers and producers, each in pursuit of their own interests. In addition, energy markets are influenced by government policies ranging from regulatory agencies to producer and consumer tax credits and taxpayer subsidized research and development.

Finally, it is worth noting at the outset of the discussion that the emphasis should be on energy systems in their entirety rather than on individual energy sources.

The National Perspective

The U.S. energy system is founded on oil and coal. It is not surprising that these two sources alone account for nearly two-thirds of energy consumption as oil serves as the primary fuel of transportation and coal as the primary source of electricity generation. Natural gas is the third cornerstone fuel of the U.S. economy and continues to grow in consumption importance as it is incorporated into both transportation and electricity generation markets. Significantly less important as a share of consumption is nuclear and hydroelectric energy, followed by biofuels and other renewables,



including solar and wind power. Each source presents unique opportunities and challenges in evaluating their role in future energy composition.

The opportunities presented by oil, coal, and natural gas are found in abundant and known reserves. It has been said of coal that we really don't know the extent of available reserves since very little effort has been made to explore for new reserves. Known sources of coal, dominated by the vast fields of the Powder River basin in Wyoming, define an industry focused on recovery rather than exploration.

Like coal, oil and natural gas are now characterized by hundred-year supplies of recoverable resources and are anticipated to move towards production efforts driven by optimal extraction rather than exploration in the years ahead. Each of the big three energy sources and their alternatives present challenges for society.

Consumers

Consumer preferences for energy composition are motivated by a desire for affordability, reliability, and environmental efficiency. Fossil fuels offer reliability, but their affordability and environmental implications are impossible to determine precisely as there is no mechanism to price the carbon associated with their use. It is a fallacy to think that there is a short-run transition available to an energy source that is cheaper, cleaner, more abundant, and more reliable than fossil fuels.

Energy policy would be improved immediately if consumers accepted as fact, and policymakers acknowledged openly, the tradeoff society will face in terms price per unit of emissions reduction as we transition to alternative sources of energy.

Such a change in the tone of the debate would allow for a more honest assessment of the role of fossil fuels in our nation's long term energy plan.



Alternative Energy Challenges

Fossil fuels are not the only sources of energy that pose challenges to expanded use in the U.S.

- Hydroelectric faces regional challenges where it is viable only where climate and topography create the requisite conditions.
- Wind faces regional challenges as well as an intermittency challenge defined by a highly variable time path of production. Large scale wind operations will likely require a complementary fossil fuel generation facility to stabilize production of electricity and assure the reliability demands of consumers are met.
- Biofuels are an incredibly small energy source currently and face a competitive use challenge - taking crops or crop land out of food/feedstock production for use in energy production – as well as a scalability challenge.
- Solar faces regional and intermittency challenges, but can be an effective complement to local production in climate appropriate regions.

Energy Transition

Energy transitions are multi-generational experiences. In the short term, fossil fuels will remain the cornerstone of U.S. energy production and consumption. In the long term, technology advancements and consumer preferences could precipitate a switch away from fossil fuels or solidify their role in the nation's energy system for another hundred years. To be certain, however, the world's economy will run on energy as it ever has, securing a crucial role for energy companies in the economic fabric of society and a crucial role for Oklahoma in shaping tomorrow's energy system.

Oklahoma Energy Tomorrow

Inside our local firms, the occupational mix is evolving to meet the needs of this new paradigm. It is not surprising that growth in this industry has required increases in occupations such as petroleum engineers, geologists, and associated technicians.

Not as expected, however, has been the tremendous growth in occupations such as accountants, auditors, compliance officers, network administrators, industrial production managers, and property and real estate managers. The occupational mix inside the doors of a typical energy firm is now sufficiently diverse so that it facilitates the expansion of non-related industries by ensuring a critical density in the city of highly-educated, highly-skilled labor.

Regional universities are adapting their programs to meet these needs, underscored by the inaugural classes of Oklahoma City University's graduate programs in Energy Legal Studies and Energy Management. This critical mass of activity combined with the impressive amenity development of the city's center is expected to be key drivers of aggressive economic growth in the decades ahead.

An Oklahoma Future

In spite of anecdotal evidence and popular refrains that the world is flat, the economic reality is one of accumulating wealth, income, and employment in urban centers. The I-35 corridor from southern Texas through Oklahoma is among the fastest growing population and employment centers in the nation. From San Antonio to Oklahoma City, employment and home prices maintained growth longer going into the recession and recovered more quickly coming out of recession. Strategic investment and amenity development have Oklahoma City on the verge of becoming a regional, innovative jobs cluster with aggressive growth in productivity and income – with proactive development policies and the natural northward expansion of the economic corridor, Tulsa should follow suit in the years ahead.

Oklahoma is fortunate to have a robust and expanding energy industry at the center of its economic landscape. By simultaneously encouraging innovation and exploiting the diverse labor pool they require to attract and expand other industries, continued efforts to support the industry will leverage our economic advantage and drive economic development in the years ahead.



Oklahoma First Energy Plan

Oklahoma Governor Mary Fallin and Secretary of Energy Michael Ming

Fostering economic development, transitioning transportation fuels, optimizing the existing energy system, and positioning Oklahoma for the future by pragmatically leveraging Oklahoma resources are the key components of the Oklahoma First Energy Plan. Natural gas, renewable energy, and energy efficiency form the cornerstone of a new energy economy to address these objectives, and Oklahoma's natural resource base of natural gas, oil, and wind, along with technology and policy to make them work better and more efficiently together, position Oklahoma well as a national model for pragmatic energy policy.

Oklahoma First Energy Plan

Creating the Oklahoma First Energy Plan to make such a future possible began with the development of set criteria. A wide spectrum of groups representing Oklahoma's energy economy, including both producers and consumers of energy, was asked to provide input as to what an ideal energy plan for Oklahoma would look like, keeping the following questions in mind:

- Does the plan grow Oklahoma's economy?
- Does it create Oklahoma jobs?
- Does it protect and improve Oklahoma's environment?
- Does it protect and improve the health of Oklahoma's citizens?
- Factoring in questions 3 and 4, does it provide reliable and affordable energy for Oklahomans?
- Does it focus on Oklahoma's unique human and natural resources?
- Where are the opportunities to create leverage and synergy from our resource base?

In considering the input from participants, which resulted from a multitude of meetings, key concepts began to emerge. For one, it became clear that the ideological goal in Washington, D.C., of

replacing traditional energy with an undeveloped silver bullet, has not materialized. Further, it could be seen that the challenges of cost and scale have not been appropriately acknowledged while abundant domestic resources of all types have been marginalized and suboptimized.

Therefore, it became apparent that a more pragmatic approach was needed, one that embraces and leverages traditional energy by making it better and more efficient instead of trying to replace it at any cost. In the process, the value and extent of Oklahoma's resource base became obvious. Oklahomans have always relied upon themselves rather than others to solve their challenges, and this time proved no different.

A popular book asks, "Who moved my cheese?" In many ways that question addresses the issue of jobs and the economy. Technology and global economic competition have moved the cheese. Oklahoma's unemployment rate, although well below the national average, is still higher than normal and economic growth is inadequate. Educating a new generation of students to meet the challenges, training a new workforce of energy technologists, and using Oklahoma human and natural energy resources to maintain existing industry and develop new industry therefore emerged as top priorities because job creation, workforce development, and economic development are key to Oklahoma's prosperous future.

Oklahoma's energy policy goals—affordable, reliable, secure, domestic, and clean—mirror those of the nation as a whole. Transportation is clearly an area of great national security risk. With almost total reliance on oil to fuel our mobility and an unacceptably high level of oil imports in a world where the energy needs of developing countries are expanding, repowering vehicles and refocusing the fueling infrastructure also become top priorities. With almost one-fourth of total national energy



requirements met by energy imports, subject to geopolitical forces beyond our control, it is clearly time to take destiny back into our hands. Therefore, new vehicles and transportation fuels are additional priorities. Oklahoma's resources squarely address this critical need.

It also became apparent that energy supply isn't always necessarily the constraint; rather, how energy is used and produced can be the restricting factors. For example, energy efficiency leverages all forms of supply by stretching the value a given unit of energy supplies. Using energy more wisely and more efficiently, and making the system smarter, is the first step in optimizing the energy system. Oklahoma has been a national leader in making the system smarter, and much potential exists to wring significant additional efficiency from the system.

Most importantly, the potential to create synergy in the energy system, where the whole is greater than the sum of the parts, is especially high for Oklahoma's resource base in, for example, the combination of natural gas and wind for new base-load electric power generation. Identifying opportunities and potential policies for synergy are thus also top priorities.

In addition, finding ways to increase all forms of Oklahoma energy production and building new markets that utilize the increase are imperative. By using the new production better than has been done in the past, the new production becomes more valuable than in the past. New and unprecedented supplies of natural gas are revolutionizing U.S. energy markets, and finding ways to efficiently utilize that energy is critical. Oklahoma also has extraordinary opportunities for increased oil production, some of which is occurring today through the application of technologies developed for unconventional natural gas. CO₂ EOR, for example, offers the potential to recover more oil than has previously been recovered in the state's history.

Finally, while making traditional energy better, embracing transformative energy where practical

should remain a priority. This requires continued improvement, innovation, and a robust R&D commitment. Such efforts not only enhance environmental performance in all sectors, but also lead to new breakthroughs that can further leverage traditional supplies and importantly attract capital investment, including critical venture capital, into the state.

Objectives, Strategies, and Recommendations

With these priorities in place, a set of overarching principles could be developed, as seen below:

- Enhance all Oklahoma energy production to create jobs and grow the economy
- Lead the transition in transportation fuels to reduce dependence on foreign oil
- Leverage Oklahoma's energy resources to make the energy system smarter and more efficient and to protect the environment and human health
- Build new markets for Oklahoma natural gas
- Support local industry and attract new industry
- Make Oklahoma an energy research leader through the creation of the Oklahoma Energy Initiative to leverage Oklahoma's traditional and renewable resources with its world-class knowledge base

With these principles as guidelines, a specific set of objectives could then be developed. Breaking these objectives down into more precise strategies and detailed recommendations led to what is presented here as the Oklahoma First Energy Plan. Serving as a quick reference guide, a summary of these objectives and strategies is presented on the following page.

To start, the plan sets the stage for the content to follow by offering a general overview of the energy landscape. It then delves into these detailed objectives, strategies, and recommendations, organizing them by the appropriate energy sector and presenting them in individual sections along with the relevant background information, available opportunities, and existing challenges. Taken as a whole, the information in this plan will enable an Oklahoma energy system that is



abundant, affordable, reliable, secure, domestic, and environmentally protective, all while growing the economy and creating jobs.

The recommendations are designed to be used by legislators in statutes, employed by regulators in rule making, or promoted through executive order or bully-pulpit advocacy. Although the recommendations are specific and tangible by sector and fuel, most importantly they include opportunities to create synergy among the energy system components. Mandates and subsidies are not necessary in order to implement these recommendations, and with a continuing tight budgetary situation, leadership in many cases will be the key factor for implementing the recommendations of this Oklahoma First Energy Plan.

Natural Gas and Oil

Objective: Encourage the continued responsible development of natural gas and oil and promote new and existing market opportunities that enhance reliance on Oklahoma resources for economic growth.

- Promote Oklahoma's flagship fuel, natural gas
- Maintain the ability to develop Oklahoma oil and gas resources with hydraulic fracturing
- Address the price differential between Oklahoma crude prices and global crude prices to correct marketplace distortions
- Ensure the Oklahoma Corporation Commission has the capacity to carry out its statutory purpose
- Increase the recovery of Oklahoma oil resources through CO₂ enhanced oil recovery
- Ensure refining regulations in Oklahoma remain effective while not impairing business development in the state
- Ensure equitable assessment of ad valorem taxes across the state
- Attempt to reduce litigation between oil and gas operators, producers, mineral owners, and surface estate owners

Renewables

Objective: Encourage the robust build out of Oklahoma's wind industry by strategically connecting Oklahoma wind resources to primary load centers across the state and **to export**

markets, as well as encourage the naturally complementary partnership of wind and natural gas.

- Endeavor to realize the potential of Oklahoma's wind resources to the fullest extent
- Enhance the integration of renewables into the power generation system by leveraging the complementary partnership potential of wind and natural gas
- Encourage increased use of renewables for power generation through the use of flexible, next-generation natural gas combined cycle equipment
- Endeavor to make Oklahoma an attractive place to locate additional wind turbine tower, blade, and component manufacturing as well as maintenance facilities and other support businesses
- Promote the large-scale build out of residential and commercial geothermal systems to preclude the need for new power generation where practical
- Solidify Oklahoma's position as a national leader in the development of biofuels
- Explore opportunities to enhance Oklahoma hydroelectric power generation and create new opportunities for the state's solar and biomass resources

Coal

Objective: Promote opportunities to enhance Oklahoma coal production and streamline state processes to create effective regulation.

- Ensure the continued vitality of Oklahoma's coal industry with a special emphasis on metallurgic coal
- Assist industry in overcoming federal obstacles that stymie new mining permit evaluation processes

Power Generation and Transmission

Objective: Harness the potential of all Oklahoma resources to promote diverse, reliable, and affordable power generation that makes the system smarter, more efficient, and more environmentally sound.

- Promote energy efficiency to preclude the need for new power generation and manage consumers' energy bills
- Address the issue of electric power dispatch preferences as it relates to Oklahoma resources
- Emphasize the importance of system reliability and fuel diversity
- Preserve Oklahoma's relative low cost of energy advantage to maintain a healthy business environment
- Encourage the build out of electric transmission to optimize power generation assets in the grid



Oklahoma's Rocky Ridge Wind Farm

Jay Marks, *The Oklahoman*

***New Oklahoma wind farm begins operation
The Rocky Ridge wind farm in southwestern
Oklahoma began turning wind into electricity this
week. (July 3, 2012)***

ROCKY — Oklahoma's newest wind farm is churning out electricity for Western Farmers Electric Cooperative.

The Rocky Ridge wind farm in Kiowa and Washita counties began operating Monday, developer Enel Green Power said.

The wind farm, which has 93 turbines spread across about 18,000 acres, can produce up to 150 megawatts of electricity. That is enough to power about 40,000 average homes.

"With Rocky Ridge, Enel Green Power continues its solid growth in the United States, which has one of the most open and competitive markets in the world," CEO Francesco Starace said.

The new wind farm pushes Anadarko-based Western Farmers Electric Cooperative's wind portfolio to 366 megawatts. That accounts for almost 16 percent of its combined generating and purchased power capacity.

"We're excited to be adding this to our energy portfolio," said Brian Hobbs, the cooperative's vice president of legal and corporate services. Western Farmers provides power to 19 member cooperatives in Oklahoma.

It also serves Altus Air Force Base, four

cooperatives in New Mexico and customers in Kansas and Texas.

Kylah McNabb, wind development specialist for the state Commerce Department, said Oklahoma continues to show its strength in the wind industry. It is currently 8th in the U.S. for installed wind power capacity.

"The addition of the Rocky Ridge wind farm to Oklahoma's energy portfolio brings Oklahoma closer to reaching our goal of 15 percent renewable energy in Oklahoma by 2015," she said. "We are on track to meet the 15 percent goal by the end of 2012."

McNabb said Oklahoma now has 1,265 wind turbines capable of generating 2,321 megawatts of electricity. That could power about 600,000 average homes.

"The Rocky Ridge wind farm is another great example of how native Oklahoma wind energy provides not only clean and affordable power, but also economic development benefits to local communities," she said.

Enel Green Power leased land from 75 landowners for the Rocky Ridge wind farm, which employed

about 150 workers during construction. It still has about 10 people working on plant management and maintenance.

The project and a wind farm in Kansas were financed with a \$340 million tax equity partnership agreement with a syndicate led by JP Morgan.



Agriculture: Sustainable - Productive - or Both?

James E. Horne, PhD, Executive Director, Kerr Center for Sustainable Agriculture, Poteau

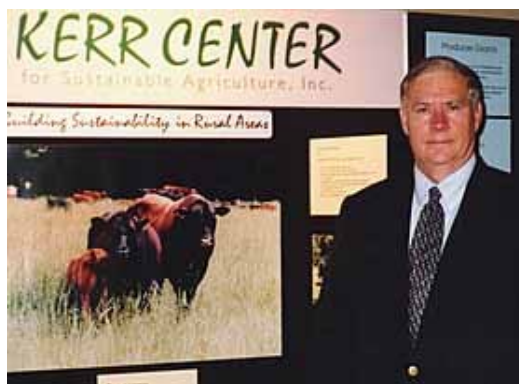
Kerr Center for Sustainable Agriculture was one of two large non-profits in the United States to focus its resources and expertise on an emerging paradigm of sustainable agriculture. The year was 1985. Thousands of farmers across the county had already lost their farms and thousands

more would follow. It was a bold move for Kerr Center but a necessary one. The nation would lose too many farms and communities to not take the risks required for finding a better way to grow its food. In 1985, Kerr Center was pioneering sustainability. Today, sustainability is held in a positive light and has become an essential part of an enduring and resilient agriculture system.

Why Sustainable Agriculture?

Sustainability is about how we meet the needs of the present generation without endangering the ability of future generations to meet their needs. The concept is main stream. Pick up any issue of Wall Street Journal, Economist, or New York Times and you are likely to find at least one article about sustainability for everything from farming to manufacturing. It has become the model for how homes, businesses, government and institutions should operate.

Sustainability for farming communities has to (1) be profitable to keep farmers on the land, (2) be based on ecological principles that include protection of natural resources such as soil, water, and biological diversity, (3) be equitable among those that farm and ranch and those that establish rural businesses, (4) set a level playing field in the markets, and (5) embrace mutual respect regardless of size, power, and influence. In rural development we should seek good neighbor



agreements with clear expectations when industry comes to our area. The promise of low wage jobs should not induce new industrial growth when the result is more rural poverty.

The economics of agricultural sustainability looks at external costs such as polluted water, loss of

diversity, soil loss, and other indicators of how out agricultural practices impact sustainability. This new field of study is called ecological economics. Conventional economics assumes that agricultural practices have no effect on the resource base. It ignores costs such as the loss of topsoil being exported with our crops or the degradation of our water. Natural resources are finite and have a cost when used. Protection of natural resources upon which agriculture depends is not a choice; it is a necessity.

Emphasis in agriculture is shifting from the concept of maximum yields to sustainable yields. Benefits of lower but consistent yields are many: less vulnerability to high cost rises of petroleum based fertilizers and diesel fuel, interruption in petroleum supplies due to war, acts of terrorism, and other unanticipated events.

Ultimately, we have to determine the carrying capacity of the earth. Population growth and affluence are among our greatest threats. Research is establishing that organic has potential for higher yields than previously thought. The United Nations' program called Save and Grow pushes healthy soil, natural ways to boost fertility, biodiversity, crops adapted to climate, farmer participation in saving seeds and development of adapted local varieties. Poverty and hunger are now properly looked at as problems within the food



system that must be dealt with by communities. Job creation can occur within a community by investing in farmers markets and local food systems. Farmers need training in sustainable agriculture. We need investments in processing, distribution, sorting and grading to produce higher value local foods. Farmers that add value to their products and differentiate their products can become price setters instead of price takers.

Kerr Center as a Model

Oklahoma is known for its achievements in agricultural sustainability because of Kerr Center and groups that have sprung up over the last 20 years, such as the Oklahoma Sustainability Network, Sustainable Tulsa, and Sustainable Green Country. Kerr Center initiatives and programs are models for the rest of the country and the world in research, education and training, market innovation and land conservation.

Research, Education & Training

Kerr Center worked with the USDA to set up a program of sustainable agriculture training for farmers in 1987. Today SARE (Sustainable Agriculture Research and Education) Professional Development Program trains farmers in sustainable theory and practices through state agricultural extension programs.

In 2001, the Center produced *The Next Green Revolution: Essential Steps to a Healthy Sustainable Agriculture*, by James E. Horne PhD. and Maura McDermott. It is a roadmap for making farms more sustainable and it has been ranked as among the best books for sustainable agriculture. The book has been reprinted twice and is used by farmers around the world.

Market Innovations

The Farm to School program was created in 2006 by state legislation to enable school districts to purchase locally produced foods to improve child nutrition and strengthen local farm economies. It is directed by the Oklahoma Food Policy Council, a joint project of the Kerr Center for Sustainable Agriculture and the Oklahoma Department of

Agriculture, Food, and Forestry and Drake University, in partnership with the USDA Risk Management Agency. Over 125 Oklahoma school districts, colleges, and universities serve Oklahoma-grown produce to students in their cafeterias. The program opens up new markets to farmers and provides nutritional and fresh home-grown food to Oklahoma youth.

A blueprint for a healthy, sustainable, community-based food system also came out of the Farm to School program through its report, *Closer to Home: Healthier Food, Farms and Families in Oklahoma*. It is the first attempt in Oklahoma to look at our food system from field to table in an analytical, research-based way. It is also the first time that information about diet, health, hunger, and poverty has been combined with information about farming and small scale food processing to paint a picture of Oklahoma's food system, from field to fork. It links food production, access to food, health issues, and nutrition with new approaches for improving food systems. One outcome was legislation passed to create incentives for grocery stores to locate in food deserts – places without sources for buying food.

Kerr Center is a member of the Oklahoma Food Cooperative with over 4,000 members, 125 of whom are food producers. Many Cooperative farms and partners are Kerr Center clients. The Cooperative offers thousands of food products including meat, vegetable, dairy and processed food. Over 80 percent of revenues remain in Oklahoma. This model is sustainable, it offers possibilities for expansion, and it has been adopted in other states.

Land Conservation

Oklahoma lacked a statewide land trust until 2002, when Land Legacy, Oklahoma's only statewide farmland preservation program, was established in partnership with the Kerr Center. Land Legacy enables landowners to protect their land from urban development through the use of conservation easements. The easements are voluntary, they help protect streams from pollution, and they add open spaces in communities and urban parks.



A Model for the World

Martha Gregory, Oklahoma Academy Research Group, Tulsa

“Oklahoma has a model to share with the world. The model is based upon decades of farming experience, research, and experimentation. It is a model already in step with a global vision of how the world’s population can be fed for the long term.” United Nations FAO

That vision is outlined by the United Nations’ Food and Agriculture Organization (FAO) in its Save and Grow report. The FAO sets forth its position on sustainable agriculture and how the world can grow the food of the future in the following excerpt from Save and Grow.

SAVE and GROW

*A Policymaker’s Guide to the Sustainable Intensification of Smallholder Crop Production
Food and Agriculture Organization of the UN
(FAO-UN), (www.fao.org/ag/save-and-grow/)*

The present paradigm of intensive crop production cannot meet the challenges of the new millennium. In order to grow, agriculture must learn to save. Consider, for example, the hidden cost of repeated ploughing. By disrupting soil structure, intensive tillage leads to loss of nutrients, moisture and productivity. More farmers could save natural resources, time and money if they adopted conservation agriculture (CA), which minimizes tillage, protects the soil surface, and alternates cereals with soil-enriching legumes.

Those simple practices help to reduce crops’ water needs by 30 percent and the energy costs of production by up to 60 percent. In trials in southern Africa, they increased maize yields six-fold. Combining CA with precision irrigation produces more crops from fewer drops. Farmers can reduce the need for fertilizers by adopting “precision placement”, which doubles the amount of nutrients absorbed by plants.

By using insecticides wisely, they can save pest predators and disrupt the cycle of pest resistance. Economizing on agrochemicals and building

healthy agro-ecosystems would enable low-income farm families in developing countries – some 2.5 billion people – to maximize yields and invest the savings in their health and education.

This new paradigm of agriculture is sustainable crop production intensification (SCPI), which can be summed up in the words “save and grow”. Sustainable intensification means a productive agriculture that conserves and enhances natural resources. It uses an ecosystem approach that draws on nature’s contribution to crop growth – soil organic matter, water flow regulation, pollination and natural predation of pests – and applies appropriate external inputs at the right time, in the right amount.

“Save & grow” farming offers productivity, economic and environmental benefits. A review of ag development in 57 low-income countries found that ecosystem farming led to average yield increases of almost 80%. Conservation agriculture, which is practiced on more than 100 million hectares worldwide, contributes to climate change mitigation by sequestering in soil millions of tons of carbon a year.

SCPI represents a major shift from the homogeneous model of crop production to knowledge-intensive, often location-specific, farming systems. Its application will require significant support to farmers in testing new practices and adapting technologies. Governments will need to strengthen national programmes for plant genetic resources conservation, plant breeding and seed distribution in order to deploy improved crop varieties that are resilient to climate change and use nutrients, water and external inputs more efficiently. Fundamental changes are also required in agricultural development strategies.

Developed countries should support sustainable intensification by increasing considerably the flow of external assistance to, and investment in, agriculture in the developing world.



Oklahoma Bioscience in 2022 ... or 2032?

Steven Prescott, MD, President, Oklahoma Medical Research Foundation, Oklahoma City

Fast Forward or Groundhog Day?

If you go to the National Institutes of Health's website and dig deep for data, you'll find the grant statistics for 1992. The NIH, a federal agency, is the nation's leading supporter of academic and nonprofit medical research. The grants the NIH awards are a good—but not perfect—proxy for the strength of a state's biomedical research community.

It's no coincidence that states securing significant amounts of NIH funding tend also to house the most vibrant for-profit biotech sectors. That's because the nonprofit research funded by the NIH births the companies that become biotech juggernauts. Those academic and nonprofit centers provide the ideas, talent pool and access to core scientific resources needed to build those companies. Think Genentech and the University of California, San Francisco. Amgen and UCLA. Burroughs Wellcome (now GlaxoSmithKline) and North Carolina's Research Triangle—Duke, the University of North Carolina and North Carolina State.

Back to 1992. In that year, the NIH doled out \$7.5 billion to U.S. biomedical researchers. Of that sum, Oklahoma scientists received \$21.6 million. That represented about three-tenths of one percent of the national pie, and it ranked Oklahoma 36th among the states.

Fast forward to 2002. In the intervening decade, the NIH had more than doubled its granting budget. It had also enacted the "IDEA" program, which set aside several hundred million dollars for states (like Oklahoma) ranking in the bottom half for NIH funding. The goal was to create infrastructure and support development of junior scientists in regions lacking the institutional



strength found in such traditional research powerhouses as California, Massachusetts and New York. By that time, the NIH's granting budget had grown by roughly 2 ½ times, to \$17.7 billion. Oklahoma's funding levels had also increased—to \$64.7 million.

This figure, which tripled Oklahoma's 1992 funding levels, outpaced growth on a national level. Our share of the national research dollar increased by about 20 percent. But because other under-funded states also benefited from the IDEA program and saw similar growth rates, Oklahoma's funding level remained at 36th among the states.

Since that time, the NIH budget has increased another 35 percent or so. Oklahoma's grant dollars have also grown, to \$82.5 million, a rate that slightly lags the national average during this time. We remain wedged in 36th place, and our slice of NIH dollars represents about .35 percent of those available.

So what will Oklahoma's biomedical research profile look like in 2022? If the past 20 years are any teacher, we'll be ranked 36th again. And that whatever the NIH budget, we'll continue to receive funding at the same levels we've seen since 1992—30 to 40 cents of every \$100 bill the agency hands out.

But as Scrooge tells the Ghost of Christmas Future in Dickens' Christmas Carol, "Men's courses will foreshadow certain ends, to which, if persevered in, they must lead. But if the courses be departed from, the ends will change." In other words, it doesn't have to be this way. Although we'll never become California, with its \$3.5 billion in annual NIH funds and armada of big biotech companies, we can divine some guiding principles from its success.



Exploit Natural Assets

Lesson number one is to recognize your strengths and build from them. In the late 1970s and early 1980s, California essentially invented the biotech industry by exploiting two assets it had in abundance—venture capital and talented medical researchers. While Oklahoma’s medical research base is considerably smaller than California’s was even 30 years ago, we nevertheless possess certain assets that give us a competitive advantage.

For example, the Oklahoma Medical Research Foundation is one of only nine Autoimmune Centers for Excellence (a designation that comes from the NIH, accompanied by significant grant funding) in the country. Earlier this year, the NIH also named OMRF one of seven U.S. Autoimmune Disease Prevention Centers. These designations, which put OMRF in such elite company as Yale, Stanford and Duke, are confirmation that our state’s researchers are among the best of the best when it comes to studying diseases such as lupus, rheumatoid arthritis and multiple sclerosis.

Pay Now - Pay later

When Oklahoma researchers have made discoveries with commercial potential, the spin-off companies tend to migrate elsewhere. Take Crescendo Bioscience. That company, which develops analytical tools to help physicians treat patients suffering from rheumatoid arthritis and other autoimmune illnesses, sprung from OMRF’s labs. When Crescendo grew to the point it needed significant outside funding, venture capitalists from California—not Oklahoma—opened their coffers. Soon after, the company’s business and research operations headed west to South San Francisco. Having since secured additional funding and with a product now on the market, Crescendo is poised to play a key role in the “personalized medicine” movement changing the face of patient treatment. Oklahoma, though, will be little more than a footnote in this success story.

To enjoy the fruits of our scientists’ discoveries, we must seed their companies when they are young and wobbly-legged. Yes, there’s a significant chance those ventures will fail. But if we do not risk early-stage funds, someone else will. When we leave that to others, they, not us, will reap

the economic benefits. In addition to Crescendo, there’s also Alexion Pharmaceuticals, an OMRF start-up based in Connecticut and worth more than \$15 billion, and Novazyme, a business built by University of Oklahoma Health Sciences researcher William Canfield, only to be swallowed up by Massachusetts biotech behemoth Genzyme. Those missed chances mean not only lost opportunities for job and wealth creation in Oklahoma, but they rob us of the chance to cultivate the management talent required to develop the next big idea that comes along.

Diversify Research Funding

Even though the NIH historically has bankrolled most academic and nonprofit research, it is not the largest funder of medical research in the U.S. That distinction belongs, by a wide margin, to drug companies, which spend more than \$60 billion each year to fund biomedical research. A large chunk of these funds are available to non-industry researchers through funded research agreements, clinical initiatives and other collaborative arrangements that focus on developing new therapeutics and clinical interventions.

With the NIH budget flat over the past five years, California institutions have substantially beefed up their partnerships with industry. The University of California, San Francisco in 2010 signed a five-year agreement with Pfizer that will provide \$85 million in research funding. UCSF also has more than 15 active collaborations with Genentech and long-term collaborative relationships with GE Healthcare and Abbott Labs. Stanford, UCLA, USC and the University of California, San Diego have similarly vibrant relationships with drug and biotech companies.

Going forward, Oklahoma scientists must look to industry and other non-traditional sources for research support. By developing a diversified research funding base, concentrating our resources and effort on fundamental strengths, and generating early stage venture funding to incubate home-grown biotech ventures, Oklahoma can take important steps forward in the biosciences. In the process, we can create jobs, wealth and life-changing innovations for our citizens. And, really, who wants to be stuck at number 36?



Building Oklahoma Bioscience

Cynthia Reid, Vice President, Greater Oklahoma City Chamber

Meet Cynthia Reid

Cynthia Reid is the Vice President of Marketing and Communications for the Greater Oklahoma City Chamber and has been a communications professional for more than 20 years.

As head of Marketing and Communications for the Chamber, she oversees national and regional marketing initiatives to promote Oklahoma City for economic development and tourism. She is also responsible for events, media relations, publications and image branding for the Chamber.

During her years with the Chamber, Cynthia's leadership has been instrumental in marketing and branding efforts. She helped lead landmark campaigns, including MAPS 3 and the Big League City campaign that helped bring the Thunder to Oklahoma City; along with numerous successful county, city and school bond campaigns.

Reid joined the staff of the Chamber in 1989 and held various positions before leaving to become the Director of Communications for Oklahoma City Public Schools, a position she held until July of 2000 when she rejoined the Chamber. She was named Vice President in May of 2004.

Reid currently serves on the board of the Oklahoma City Arts Council and is a graduate of Leadership Oklahoma City, class 17.

A graduate of Oklahoma City University, with a BA in Mass Communications, she is married to John Reid and they have one daughter, Chloe.



Historically, Oklahoma has been well-known for energy, agriculture and a strong Native American and Western heritage. That's why some people may be surprised when they learn that Oklahoma also has a growing bioscience industry – one that employs more than 26,000 people and is outpacing the nation in growth.

Oklahoma's bioscience industry has an economic impact of \$6.7 billion.

The region's bioscience employment grew 17.8 percent between 2001 and 2008, outpacing the 15.9 percent growth nationally. There is a concentrated presence of bioscience activity in Oklahoma City at the Presbyterian Health Foundation Research Park and The University of Oklahoma Health Sciences Center; there is also strong bioscience research and infrastructure in Norman, Ponca City, Stillwater, Muskogee and Ardmore, particularly at the Samuel Roberts Noble Foundation. Thousands of researchers, scientists and business managers work in this industry in Oklahoma every day, creating life-saving drugs, discovering new technologies and treating disabilities with new tools.

"I don't think people realize, on a national level, the quality of bioscience research and discoveries coming out of Oklahoma," said Roy H. Williams, president & CEO of the Greater Oklahoma City Chamber, which is organizing the trip. "We have new drugs in clinical trials, important breakthroughs in agriculture and cancer treatment, and state-of-the-art technology and capital to support our growth."

Bioscience has become a vital part of Oklahoma's economy, and one that the Greater Oklahoma City Chamber is continually looking to grow. Each year, the Chamber, in conjunction with the Oklahoma Bioscience Association and the Oklahoma Department of Commerce, takes a delegation to the BIO International Convention.



This is the largest bioscience show in the world, and is attended by approximately 16,000 individuals each year. The conference was held in Boston this year in June, and Oklahoma took its largest delegation to date – more than 90 representatives attended from all over the state.



While at the conference, Oklahoman attendees attended breakout sessions and scheduled partnering meetings with potential clients. In between, they helped staff a 2,000-square-foot Oklahoma Bioscience Pavilion, complete with touch-screen monitors showcasing Oklahoma's bioscience companies and three conference rooms. The attendees were consistently in meetings with people interested in Oklahoma bioscience - over the course of the four days, it was rare that any of the three conference rooms were vacant.

“Participation at BIO provides Oklahoma bioscience companies, researchers and service providers a unique opportunity to make new connections, gain valuable information and find collaborations with a variety of potential partners,” said Sheri Stickley, president and CEO of the Oklahoma Bioscience Association.

The pavilion had six “greeting” points where conference-goers were greeted, given information about Oklahoma and handed a small gift. If they were interested in learning more about Oklahoma bioscience, they were moved into the booth to speak with an expert in their area of interest. Each attendee's badge was scanned by a greeter, and their contact information was collected. Those leads will be used throughout the year to create stronger bioscience connections for Oklahoma.

But networking didn't end when the tradeshow floor closed. The Oklahoma delegation also hosted an evening reception at Storyville, a uniquely-Boston restaurant located near the convention center. Delegates invited their potential clients and/or those they had partnered with, for food, drinks and more networking - a terrific event.

Oklahoma had a lot of exciting accomplishments to share at the conference this year. Highlights included:

- *The Oklahoma Medical Research Foundation plans to launch physician-initiated clinical trials in humans using an experimental compound called OKN-007, which may improve the odds of survival for patients with Glioblastoma – a brain cancer with a nearly 100 percent mortality rate.*
- *Collaborators at The Samuel Roberts Noble Foundation, Rutgers University and the University of Wisconsin have discovered a new type of lignin that holds the potential to be a new source of carbon fibers for manufacturing.*
- *Altheus Therapeutics completed its Phase I study, and recently closed its Series B round of financing for its new ulcerative colitis drug.*
- *Selexys Pharmaceuticals completed its Phase I clinical study of SelG1 for sickle cell disease.*
- *Researchers at Oklahoma State University recently discovered a new type of chiral catalyst that uses gold in a way that almost exclusively forms either the right-hand or left-hand form of the new molecule. This discovery is specifically important for drugs made of enantiomers, in which the left-hand and right-hand mirror images have very different and sometimes harmful effects on the body.*

Before, during and after the show, these and other stories were highlighted in TV and print outlets, which ran approximately 20 segments and articles about Oklahoma bioscience.

A total of 3,004 leads were captured at the conference, and they will be followed up with throughout the year.

The group is already planning for next year's BIO convention, which will take place in Chicago in April 2013.



A Tiny Bit About Nanotechnology

Jim D. Mason, CCE, CEcD, EDFP, Executive Director, OK Nanotechnology Initiative, Edmond

A quiet revolution began in 2000-1 when three key events occurred: 1) The National Science and Technology Council issued this state-

ment- "Nanotechnology is an enabling technology that will impact of everything human made in this century." 2) President Clinton signed into law the National Nanotechnology Initiative, which eventually resulted in 25 federal agencies creating over \$5 billion funding for nanotechnology research. 3) Oklahoma State University, the University of Oklahoma, and the University of Tulsa jointly applied for and won a major grant from the National Science Foundation to create a sustainable infrastructure in nanotechnology in our state.

This \$6 million grant was written and coordinated by the Oklahoma EPSCoR (Experimental Program to Stimulate Competi-

tive Research) Office. The national EPSCoR program reserves special funding for those states like Oklahoma which have traditionally

not been successful in winning national competitive research grants. The grant required the three major research universities in Oklahoma to work cooperatively together to build an infrastructure and expertise in the field of nanotechnology.

This and subsequent grants provided significant funding over several years to provide 1) shared equipment specifically designed to work at the nanoscale, 2) faculty skilled in nanotech research, and 3) research fellowships in nanotechnology for graduate students.

Nanotechnology is defined as the manipulation of atoms and molecules at the nanoscale (1-100 nanometers) to create new structures, devices and systems which have novel (new) measurable properties. A nanometer is one billionth of a meter. Nanotechnology for industry is often seen as new coatings, lubricants, insulators, strengtheners, or totally new materials.



Nanotechnology allows researchers to make products smaller, stronger, faster, lighter or more durable.

In Oklahoma, companies utilize nanotechnology processes and materials to make better oil and gas equipment, ultimately small rechargeable batteries (2 billion nano batteries will fit on the surface of a nickel), more durable medical lenses, new medical applications, odor eliminating clothing, the world's smallest heart pump, non-oily sunscreen that goes on clear, tiny sensors for night vision glasses, corrosion resistant metals, potential cures for cancer, and many, many more.

In 2002, a small group of Oklahoma businessmen began to meet and talk about creating a State Nanotechnology Initiative for Oklahoma companies.

"Oklahoma has recently been touted as America's leading state for companies who are applying nanotechnology ..."

In 2003, the legislature authorized the group to develop a strategic plan for the creation of the Oklahoma Nanotechnology Initiative (ONI). The

plan as developed hinged on the need for a part time Executive Director who would coordinate efforts to work with Oklahoma companies to utilize nanotechnology to make improved products while encouraging the research efforts of the universities. That plan was funded in 2005 and an executive director was hired and the Oklahoma Nanotechnology Initiative was off and running.

A final piece of the Oklahoma nanotechnology story was created in 2006 when the ONI assisted the legislature in creating the nation's first financial incentive program specifically focused on assisting Oklahoma companies to develop and or acquire nano processes and/or materials to make new or improved products. The Oklahoma Nanotechnology Sharing Incentive Act was implemented by The Oklahoma Center for the Advancement of Science and Technology (OCAST) as the Oklahoma Nanotechnology Applications program (ONAP) with funding of approximately \$1 1/2 million per year.



Nanotechnology research has flourished in Oklahoma and the ONI has documented an increase from four to nearly 70 Oklahoma companies who are involved in some level in using nanotechnology to make new or improved products.

One of the early nanotechnology researchers at the University of Oklahoma was Dr. Daniel Resasco who was working with carbon nanotubes which are structurally 100 times stronger than steel but extremely small (10 thousand times smaller than a human hair). Dr. Resasco said, "These carbon nanotubes are amazing materials, but the way they are currently being made is not scalable, you cannot make large quantities of them. One of the first ONAP award winners, Dr. Resasco pioneered a new way of making carbon nanotubes by producing them in a continuous fluidized bed reactor that he developed. This process allows the new company that was formed, "Southwest NanoTechnologies" (SWeNT) to become the world's leading producer of large quantities of high purity, high quality carbon nanotubes. SWeNT's new plant in Norman now partners with large corporations to make better products with carbon nanotubes.

Charlesson, Inc., of Oklahoma City now uses nanoparticles to deliver time release medicines to the human eye. Access Optics in Broken Arrow solved a problem of seal failure in medical devices used in the human body, with a nano coating that



Many nanoparticles occur naturally in nature and some others are manmade engineered materials. A buckyball is a natural nanoparticle that may someday be able to carry a tumor killing molecule deep into the human brain. The buckyball also is theorized as the material that today carries the scent of a candle into our brain.

A carbon nanotube is a manmade nano material that has been proven to conduct electricity better than copper or any other known conducting material. It also has tremendous strength yet allows some flexibility and is used in everything from electric nano wiring cables for airplanes to bullet proof vests to nanometric inks. A bicycle made with carbon fibers reinforced with carbon nanotubes is 800 times stronger than one made of steel but only weighs 2 pounds.

they developed. Dr. Dale Teeters of the University of Tulsa has developed the world's smallest rechargeable batteries and is now partnered with Frontier Electronic Systems in Stillwater in making an electric vehicle for the military using his extremely light weight nano batteries.

Amethyst Research Corp in Ardmore is using nanotechnology to make the world's best night vision glasses that can see in even the darkest cave.

Xplosafe, Inc., is a company founded in Stillwater from research developed by Dr. Alan Appblett of Oklahoma State University which uses nanotechnology to detect very small particles of explosives for use in airport detection devices.

Oklahoma companies involved in nanotechnol-

ogy are spread all over the state from Guymon to Durant and from Lawton to Pryor (a map showing communities with Oklahoma nano companies is available). Oklahoma has recently been touted as America's leading state for companies who are applying nanotechnology discoveries to make new and improved products and we have only just begun.

The Oklahoma Nanotechnology Initiative's vision is that Oklahoma companies become world leaders by utilizing nanotechnology discoveries from anywhere in the world through licensure, patent or partnership to make new or improved products.



Don't Call Me a Drone!

Jennifer Palmer Oklahoman

State prepares to apply for unmanned aerial vehicle test site. The FAA is expected to choose six states by the end of the year, a designation that would give flight to the budding UAS industry in Oklahoma. (July 2, 2012)

Don't call them drones, the mindless, empty aircraft used by military fighters for target practice. Though unmanned aerial vehicles fly without a human pilot on board, today's models are sophisticated, cheap and safe - and they are being designed, manufactured and flown right here in Oklahoma, industry officials say.

The unmanned aerial systems industry is growing worldwide and is poised to truly take flight in the U.S. once the Federal Aviation Administration opens up airspace to unmanned aerial vehicles, or UAVs, which by law, it must do in 2015. To prepare for the deadline, the FAA plans to choose six states to become designated test sites and Oklahoma is throwing its hat in the ring.

On Thursday, Oklahoma was the first state chosen through a Homeland Security Department program as a testing site for unmanned aerial systems to help first responders — during events such as search and rescue and natural disasters.

However, earning the FAA designation would greatly expand the testing possibilities here. State Secretary of Science and Technology Stephen McKeever, a member of Gov. Mary Fallin's unmanned aerial

systems advisory council, said the state already has assets that are attractive to the industry and will make Oklahoma very competitive.

"The main purpose of becoming an FAA test range is really to stick a flag in the ground and say 'We're here,'" he said. "The hope is, by doing this, we'll be able to build and grow the industry in the state."

The FAA is expected to request test site proposals in August and make its final selection by the end of the year. About half the states in the country are expected to apply. If Oklahoma is chosen, the designation could attract manufacturers and encourage local companies to perform work on UAVs because testing the vehicles would be convenient. That, in turn, would bring high-paying jobs, which is why the state Commerce Department is involved, said Dave Wagie, who is leading the effort for the department.

UAV pilots could earn yearly salaries of \$85,000 to \$115,000; engineers upward of \$130,000; and training instructors \$75,000 to \$80,000, McKeever said.

By The Numbers

Annual salary: UAV pilots can earn \$85,000 to \$115,000; engineers upward of \$130,000; and training instructors \$75,000 to \$80,000

\$5.9 billion: 2012 market for unmanned aerial systems:

2015: FAA must open airspace to UAVs

SOURCE: Industry figures

The main purpose of becoming an FAA (Federal Aviation Administration) test range is really to stick a flag in the ground and say 'We're here.' The hope is, by doing this, we'll be able to build and grow the industry in the state." Stephen McKeever, State Secretary of Science and Technology

Currently, the only way to fly a UAV is with a certificate of authorization from the FAA or in restricted airspace, such as at Fort Sill. Wagie said the military installation near Lawton has designated a 200-square-mile section of airspace that can be used for UAV test flights and approved on short notice. The flight testing possibilities at Fort Sill are just one of the reasons Oklahoma is becoming recognized for its UAS industry, he said.





A soldier demonstrates a small unmanned air vehicle called a Perching Micro Air Weapon, or PMAW, which is being funded by the Air Force Research Laboratory (AFRL) Munitions Directorate. - Provided by Design Intelligence Incorporated, LLC

Oklahoma State University now has a UAS track for aerospace engineering majors and at least a dozen companies are producing electronics, equipment and unmanned aerial vehicles.

One of those companies, Supero, is developing a light UAV with a 60-inch wingspan that could be used by firefighters for search and rescue and grass fires, said company founder Robert Carr. It can accomplish a near-vertical take off and landing, so no runway is required. And it's controlled with an iPad-type device.

"You don't have to be a pilot to operate this plane," Carr said.

Supero plans to demonstrate the vehicle to state and federal fire marshals in mid-July. Firefighting is one of the potential applications for UAVs, Wagie said, but there are many others. He envisions tiny vehicles that could perch on a windowsill in a hostage situation, mid-sized UAVs that could stay aloft for a day or two and act as a cellular tower after a natural disaster and cargo jets that could

transport packages across the country without requiring a pilot on board.

There could be simple versions, allowing a farmer to learn to fly it through a two-hour community college course, for example, and more complex vehicles that require an FAA certified pilot who flies it from the control tower on the ground, out of harm's way, Wagie said.

UAVs can be made more cheaply than traditional aircraft because they are smaller and don't require the oxygen systems and other instruments required for humans. They can stay in the air longer because without the weight of passengers, they can carry more fuel. And UAVs can be equipped with video cameras and heat sensing equipment to provide "eyes in the sky."

Features such as those to sense and avoid an object, landing and returning to its home base can be automated.

The world market for unmanned aerial systems is expected to reach \$5.9 billion this year and grow to \$15.1 billion by 2022. About 1,300 different UAVs are being tested or manufactured worldwide and they are frequently used in other countries, such as Japan, for agricultural and coastline monitoring, Wagie said.

"The U.S. uses them least because the FAA is probably the most safety-conscious and restrictive," he said.

At the FAA test sites, research on UAVs will be performed in various terrains and weather conditions to ensure they are safe sharing the skies with commercial aircraft.

It's hard to gauge the public's comfort level with seeing an unmanned aircraft, and Wagie said UAVs probably won't replace commercial pilots for a long time. However, in dangerous situations, the vehicles keep pilots out of harm.

"If we lose a little \$1,000 UAV, we'll just launch another one," he said. "We don't put a human at risk."

Lily and Proton Therapy at ProCure

Marcia Shields, ProCure Proton Therapy Center, Oklahoma City

Since opening our doors in Oklahoma City in August 2009, ProCure Proton Therapy Center (ProCure) has treated over 800 cancer patients from 30 states and ten countries. Our patients stay for treatment for up to eight weeks, contributing to the economic development of hotels, restaurants and many entertainment venues.

Just one of only ten operating proton therapy cancer centers in the U.S. (ProCure owns three with a fourth under construction) and only 30 in the world, we provide access to the most advanced form of radiation treatment available to patients right here in OKC.

Proton radiation therapy more precisely targets cancer tumors and allows for higher dose but without the complications of radiation to healthy tissue around the tumor. That means patients have less risk for side effects during and following treatment. Fortunately proton therapy is becoming more accessible to more patients as centers are now being built in additional prestigious cancer centers as Mayo Clinic. Oklahoma City has been a pioneer bringing in the only proton therapy center in the central U.S. through ProCure, in conjunction with the Integris Cancer Institute of Oklahoma.

But more important than what we do for OKC, is what OKC does for our patients. The best way I can describe what OKC and its citizens mean to ProCure is through a story about Lily Graham, a three-year-old girl from the UK with brain cancer.

Lily and her family were sent to the ProCure in OKC by the National Health Service (NHS) in June 2011. This was a last resort for Lily who was not responding well to her other cancer treatments.



Lily goes home to the UK

“There are 30 proton therapy centers in the world ... Oklahoma City has been a pioneer bringing in the only proton therapy center in the central U.S. ... through ProCure, in conjunction with the Integris Cancer Institute of Oklahoma.”

For this quiet, rural family with a seriously ill little girl, it was a long trip to a foreign country and a city of which they'd never heard. But they were willing to go anywhere at that point to save Lily's life. Even if it meant leaving her sisters in the UK for two months.

Lily responded extremely well to her proton therapy treatment here. And OKC responded to her and fell in love with her. She returned to the UK with

a shrunken tumor and a good diagnosis. But upon returning her parents began to fret as she again started losing her appetite and bubbly personality. They wondered if it was because she was missing, and needing, the warm,

welcoming environment that is all OKC. So they returned on holiday to test their theory.

OKC rolled out the red carpet. A Thunder game in a private suite. Meeting Rumble and the Thunder Girls. Parties and events. I need to boast a bit about the ProCure Proton Therapy Center staff and their love and compassion for Lily. But it's also our wonderful partners and the people of OKC that welcomed her back. And Lily bounced back. Now the Grahams are seriously considering a permanent move to OKC. Anything to help Lily remain healthy and happy.

Along with the NHS in the UK, a number of other healthcare providers in several countries including the Netherlands, Israel, Germany, Lebanon and others are choosing OKC as the destination for pediatric patients' proton therapy. To date we have treated 45 international patients who all fall in love with Oklahoma, especially its people. Visit www.procureokc.com for videos of our patients.



Advancing Oklahoma's Bioscience Industry

Sherri Stickley, President and CEO, Oklahoma Bioscience Association, Oklahoma City

A Norman company saves lives of AIDS patients around the world who are threatened by a devastating fungal disease.

An Oklahoma City start-up is developing the world's smallest implantable blood pump to treat heart failure.

Ardmore's Noble Foundation scientists discovered a lignin in certain plants that may be a new source of carbon fibers for manufacturing.

OMRF researchers are developing compounds to treat soldiers with combat-related hearing loss.

It's all happening in Oklahoma.

Unlike many industries, bioscience touches lives in every corner of our state. Oklahoma bioscience companies are working every day to solve the greatest challenges facing our society — whether it's finding a cure for cancer, new methods to feed a hungry world, or creating renewable energy sources. It's vital we support the growth of the Oklahoma bioscience sector if the potential that resides in our laboratories is to be translated into the breakthrough cures, treatments, enhanced agricultural products, and revolutionary biofuels that can transform society.

A key economic driver for Oklahoma

Bioscience has also become a key driver for Oklahoma's economy. Concentrated primarily in an 11 county region encompassing Stillwater, the Oklahoma City metro and Ardmore, it contributes over \$6.7 billion in annual economic activity and supports 51,000 jobs earning \$2.2 billion -- more than 6% of all employment in the region.

These are quality jobs: the average annual wage in Oklahoma's non-hospital bioscience sector is 32% higher than the average annual wage of the



total private sector. From 2001-2008, Oklahoma's non-hospital bioscience sector grew faster than the bioscience sector nationally, and significantly faster than the private sector as a whole.¹

Nationally, total employment in the U.S. bioscience sector reached 1.42 million in

2008, and during the first year of the recession, employment in the bioscience industry actually grew 1.4% while total private sector employment declined 0.7%. The average biotech wage in 2008 was 71% more than the average wage in the rest of the private sector, and biotech wages have increased by 10.1% since 2001, compared to a 3% increase for the private sector as a whole.²

The market continues to expand as the bioscience industry tackles some of the world's most critical and costly problems. Right now there are over 800 new treatments being developed for cancer, 300 for heart disease, 200 for diabetes, and 100 for Alzheimer's.

Reducing cancer death rates by just 10% would have a \$4 trillion impact, and delaying Alzheimer's by 5 years could save \$50 billion per year. Advanced biofuels production could reduce U.S. petroleum imports by \$70 billion by 2022.³

The future of bioscience in Oklahoma

Oklahoma's enterprises are consistent with the Biotechnology Industry Organization's profile of bioscience companies nationally, which shows that 48% of typical biotech companies are at least 3 years away from having product revenue; 71% of typical biotech companies have fewer than 25 employees, with 90% having fewer than 100; and that most private biotech companies are not yet profitable--they rely on investor-backed capital to sustain operations.



These small businesses face additional hurdles that distinguish their industry, including significant development time--which in turn necessitates significant amounts of investment capital--and complex regulatory requirements. It takes 10 to 15 years and as much as \$1 billion, on average, for an experimental drug to travel from lab to U.S. patients. Only 5 in 5,000 compounds that enter preclinical testing make it to human testing, and of these five, only 1 is ultimately approved for sale.

It continues to be a challenge for our fledgling bioscience companies to find the financial, technical and human resources they need in Oklahoma. To survive, our companies must have access to a highly skilled workforce, locally accessible capital at every stage of development, and strong technical support.

Our academic and private research institutions must be able to attract world-class scientists and increased federal, state and private research funding.

Oklahoma's bioscience sector is at a tipping point: while it stands on the verge of reaching the critical mass necessary to achieve sustained prosperity, the recession and challenges unique to this industry have put it in danger of slipping backward. We've built a solid infrastructure of world class research institutions, outstanding facilities, and a positive business climate. For our state's continued prosperity, it's vital we don't forfeit these gains and lose quality jobs.

How Oklahoma should support growth?

Oklahoma must be willing to take bold steps to become and remain competitive in science and technology. If we fail to do this, Oklahomans won't reap the results of the research conducted here, and the promise of a new industry with tremendous job-producing potential will be lost.

There are at least two things Oklahoma should do now to help ensure a bright future for advanced technology industries like bioscience:

Commit to a 21st century strategy

First, state leaders must recognize that we must employ different strategies to grow our bioscience sector than we've used to grow more traditional industries--or industries where Oklahoma already has significant headquarters or large, established operations--and we must commit to implementing strategies that are competitive, well-funded and consistent with best practices nationally.

For example, while they may be attractive for some, tax cuts are not a core issue for companies that are pre-revenue. A more productive strategy for encouraging the growth of bioscience and other advanced technology enterprises is to provide research grants, offer commercialization support, and facilitate access to capital and talent. The local availability of a comprehensive spectrum of investment capital--including research grants, seed capital, angel and later stage private capital--along with access to experienced management talent, top-flight scientists, and a well-qualified workforce, will help these companies thrive.

State funding through programs such as OCAST and the recently terminated EDGE endowment has been vitally important to the state's bioscience industry, but has never been made available at a level sufficient to move Oklahoma forward.

In fact, Oklahoma is one of only four states which have consecutively declined in various innovation and technology rankings for the past 20 years. With the recent demise of the EDGE program, it is more imperative than ever to take immediate steps to modernize and restructure the state's technology-based economic development programs to reflect best practice, and provide funding at a level sufficient to make Oklahoma nationally competitive.

A good first step would be to convene a conference of business, government and education leaders, hosted by the Governor, to propose a plan and identify a robust, dependable, and consistent funding mechanism.



At the federal level, it is important that our Congressional delegation support adequate funding for vital federal programs, including those of the National Institutes of Health and the Small Business Innovation Research, or SBIR, program. Even in the face of a challenging budget environment, such funding is critical to the survival and growth of our bioscience industry, both in Oklahoma and nationally, and essential to both the physical health of our citizens and the economic health of our nation.

Protect the state's image

Second, we must recognize the complex factors that go into attracting top research talent to our state and undergird, not undermine, those efforts. Internationally recognized scientists and executives read about our state and our legislature in the Wall Street Journal and other publications, and form opinions about whether Oklahoma is welcoming or hostile to scientific research and technology-based enterprise.

The conclusions they reach often determine whether they choose to come here--bringing with them grant funding, research teams, management expertise and high wage jobs--or not.

It's essential that our elected leaders recognize the importance of image and the real economic impact – good or bad – it can have on our state, and strive to foster an environment conducive to bioscience research. One way to facilitate this would be for legislators to consult with credentialed scientific researchers from Oklahoma's research institutions when drafting any proposed legislation concerning such research.

Oklahoma must decide what kind of future it wants, and if it wants high skill, high wage, knowledge-based industries like bioscience to be part of that future. If so, we must move quickly, boldly and decisively to employ the right strategies to achieve that vision.

Notes

- 1 *The Economic Impact of Greater Oklahoma City's Bioscience Sector, prepared for the Greater Oklahoma City Chamber by Battelle Technology Partnership Practice, January 2011*
- 2 *Biotechnology Industry Organization, "Unleashing the Promise of Biotechnology: Advancing American Innovation to Cure Disease and Save Lives," 2011*
- 3 *Biotechnology Industry Organization, "Unleashing the Promise of Biotechnology: Advancing American Innovation to Cure Disease and Save Lives," 2011*

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Our (Sea)Port of Catoosa

Kyle Arnold, Tulsa World

Port of Catoosa's main dock to undergo improvements (June 20, 2012)

CATOOSA - The Tulsa Port of Catoosa's main dock will be getting major improvements, paid for in part by a federal grant announced Tuesday.

The U.S. Department of Transportation will give the port \$6.4 million as part of a \$12.3 million dock rehabilitation project.

Port officials plan to tear down a 32,000-square-foot storage building that is largely unused and occupying nearly half of the main dock. Plans call for repaving and the purchase of a new 150-ton mobile crane to occupy the building's former location.

As part of the project, port officials also plan to rehabilitate the port's 40-year-old crane, nearly doubling the dock's loading and unloading capacity and allowing two to three barges to load and unload at a time. Today, the dock can only accommodate one barge.

Separate from the grant proposal, the storage building will likely be replaced in the near future by a cheaper storage building near the dock. The building is sometimes used to store weather-sensitive cargo such as rolled steel.

"The rehabilitation of the main dock at the port will generate substantial long-term benefits to the nation and the region through significantly increasing



the port's overall capacity by creating a state-of-the-art cargo handling facility within the dock's current footprint," said David Page, chairman of the City of Tulsa-Rogers County Port Authority.

The grant comes from nearly \$2.2 billion in 2011 discretionary spending by the Transportation

Department to fund improvements to rail, waterways and critical road projects across the nation. The same program is being used to pay for \$49.5 million replacement of the Interstate 244 bridge over the Arkansas River.

The other half of the port project will be paid for by the Tulsa Port of Catoosa, a self-sustaining, publicly owned 2,500-acre industrial park and waterway port located northeast of Tulsa.

Port officials said they will take out a loan to pay for the crane, and the rest of the funding for the improvements will come from the port's operating budget, paid for by rent collected from the park's 65 tenants.

"The Port of Catoosa is a major economic gateway," U.S. Sen. Jim Inhofe, R-Okla., said in a statement. "Barge traffic delivers \$1.3 million of commerce to Oklahoma each day, and this grant will provide a portion of the funding to make important improvements while expanding the Port of Catoosa's main dock." Port officials applied for the same grant last year but did not receive funding for the project.



Why Freight Rail Matters in Oklahoma

Jim Collard, PhD, Oklahoma Academy Research Group, Shawnee

AUTHOR NOTE:

I also acknowledge the importance of passenger rail. However, the focus of this article is on moving materials and products from the grower/manufacturer to the end user.

On March 25, 2010 USA TODAY ran an article describing Warren Buffet's decision to buy a controlling interest in the Burlington Northern-Santa Fe (BNSF) railroad.

During the interview Mr. Buffet is quoted as saying that railroads "...are the only mode of freight transportation that can handle growth. What's not to like about that?"

He went on to say that railroads represent the future as they are best positioned to move raw materials and finished goods. This was encouraging support to all of us who believe that freight railroads are a critical and essential element of our national and state economy.

The first commercial railroad in the U.S. was the Granite Railway located near Quincy, Massachusetts. Built to haul granite rocks from a quarry to the Neponset River for trans-shipment to Boston via barge, this model is still valid today. Moving heavy and bulky raw materials and products are where railroads make their biggest impact. It is also important to understand that the first railroads were all short line that were financed and constructed by the local communities. Eventually the lines began to interconnect creating longer routes and improving the economies of the communities they served.¹

According to the U.S. Federal Railroad Administration, in 2010

the freight rail industry generated \$59.6 billion in revenue. The major rail-carried commodities (in terms of ton-miles) included coal, intermodal traffic such as trailers and containers on flat cars, farm products, and chemicals. Today, the fastest growing segment of rail traffic is intermodal (moving materials and goods back and forth from truck, to rail, to barge).² Currently our Nation's railroads fall into two broad categories: Regional and Short Line. The Regional Railroads are line-haul railroads operating at least 350 miles of track. The Short Line Railroads are subdivided into Local, Line-haul operating less than 350 miles of track and Switching & Terminal railroads that transfer cars between railroads or operate solely within a facility.³ In addition, the Surface Transportation Board has developed three categories of U.S. railroads. They are:

- Class I – Carriers with annual operating revenue of \$398.7 million or more
- Class II – Carriers with annual operating revenue less than \$398.7 million but greater than \$31.9 million.
- Class III – Carriers with annual operating revenues with less than \$31.9 million and Terminal companies regardless of operating revenues.

So what about Oklahoma?



According to the 2012 Oklahoma Statewide Freight and Passenger Rail Plan in 2010, rail accounted for 43 percent of goods shipped in the U.S., followed by trucking with 31 percent, and waterways and pipelines each accounting for 13 percent. Air cargo





represents less than one percent of the ton-miles. Currently there are approximately 3,600 miles of railroad in Oklahoma of which 2,360 miles are operated by the three Class I railroads operating in Oklahoma: BNSF, Union Pacific (UP), and Kansas City Southern Railway (KCS). The remainder is operated by the eighteen Short Line railroads.⁴

Freight rail services fall into four categories. Bulk train services move commodities such as coal, sand, gravel, grain, barley, oats, animal feed, wood pellets, auto parts, etc. Auto train services transport automobiles, trucks, vans and other vehicles. General merchandise train services are comprised of various freight car types such as boxcars hauling general retail products, tank cars containing oil, and open gondola cars. Finally, Intermodal train services move materials and products, trailers, vehicles, etc. that are transferred between rail cars, trucks, and ships.

It should be clear from this information that freight rail volume is an excellent gauge of economic activity. In 2009, 18.4 million tons of rail freight originated in Oklahoma. Of this 7.2 million tons (45%) were broken stone or riprap, 2.3 million tons (14%) were grain, and 1.9 million tons (9%) were fertilizer. So these three categories account for almost 70% of all freight rail products in our state. The remainder is primarily fiber, paper or pulpboard; gravel & sand; petroleum refining products; and chemicals.

It is also important to note that Oklahoma contains five major U.S. Department of Defense installations. Of these, Ft. Sill and the McAlester Army Ammunition Depot regularly use rail service

and consider it a critical part of their missions. The other three installations, all Air Force bases, have discontinued rail service, but are positioned to re-activate the rail when necessary. Further, Oklahoma is a link in the Strategic Rail Corridor Network (STRACNET) that consists of the rail lines that are important to our national defense.

We also need to keep in mind that the 21 (the 3 Class I and 18 short line) railroad companies employ over 1,770 Oklahomans, for a payroll of approximately \$115.8 million. They also spent over \$15 million on “in-state” purchases and \$6 million on capital improvements within our state. And these numbers do not count the multiplier effect.

In closing it is important to mention that rail was listed as a major component of the Governor’s 2011 “Bold Ideas for Oklahoma” Economic Development Strategy. Perhaps the two most important recommendations that came from the Governor’s Task Force on Economic Development and Job Creation, Rural Economic Development Study Group are: the creation of a “Rail Access Fund” to provide rural Oklahoman cities, towns and other entities financial assistance for the construction of rail sidings, spurs, and loading facilities and the restoration of state tax credits for the replacement and improvement of rail lines.

SOURCES

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- 4 “Oklahoma Statewide Freight and Passenger Rail Plan.” (2012). *Parsons Brinckerhoff. Oklahoma Department of Transportation.*
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Section 6

Public Sector



America's Two Economies

Daniel Henninger, Wall Street Journal Editorial Board

For a long time, the United States had one economy. Now we have two economies that compete for America's wealth: A private economy and a public economy. The 2012 election will decide which will be subordinate to the other. One economy will lead. The other will follow.

How the U.S. arrived at the need to choose between two competing economies reveals a lot about the political polarization in the country.

Any history of the Democratic Party in the 20th century will recognize its roots in the American labor movement. The party was defined by the names of those unions. The United Mine Workers. The United Auto Workers. The Brotherhoods of Teamsters and Railroad Workers.

Consider what those names represented: Both Democrats and Republicans were rooted in the private economy. Unionized workers knew then that this private economy was where they made their living. The arguments were over dividing the productive fruits of that economy. That was your father's Democratic Party.

From the 1960s onward, the professional Democratic Party began to lose its relationship with the private economy. Democratic politicians drew closer to a rising public-sector union movement and its campaign financing, while the private unions declined. This meant the party itself was slowly disconnecting from the machinery of the private economy and becoming part of a rising parallel economy, the public economy of government.

There was one other big event that convinced Democrats that their public economy was equal to or better than the private economy. It has to do with the Democratic Party's moral identity. After JFK's assassination, Lyndon Johnson passed the building blocks of the Great Society, notably Medicare and Medicaid. But most importantly came the Voting

Rights Act of 1965. The legislative events of that period (no matter that they passed with bipartisan votes) convinced the Democratic Party once and for all of government's moral efficacy. Public spending, conclusively, was now a public good. Today the private and public economies are in head-to-head competition for the nation's wealth—with the private economy calling that wealth capital or income, and the public economy calling it tax revenue and making moral claims for spending tax revenue.

Until recently and except for the Reagan years, the Republican Party has largely been a confused onlooker, uncertain how to embrace the private economy. In the 1990s, the party embraced the private sector mainly as a source of contributions via K Street lobbyists. In short, crony capitalism. With the Obama administration, the tensions between the country's two economies clarified.

The \$831 billion spending bill in 2009 was intended to stimulate hiring of public-sector workforces but also among the satellite businesses that are subsidiaries of the public economy. Barack Obama's routine use of the traditional private-economy term "investment"—in energy, education and such—is the public economy claiming capital for its needs.

President Obama is telling the private economy it must subordinate itself to the public economy's moral efficacy. The passage in 2010 of the Affordable Care Act, with no Republican support, was justified as a 1960s-type act of moral necessity.

In the November 2010 elections, the private economy pushed back. Two years into the financial crisis and amid tea-party insurgencies, Democrats were swept out of office at every level of government.

These are not small events. Powerful belief systems are in motion today, and they are slamming into





each other. Rep. Paul Ryan in the first sentence of his now-famous Roadmap budget said, “Rarely before have the alternatives facing America been so starkly defined.” President Obama, announcing his ideas on taxes on July 9, said, “What’s holding us back . . . is a stalemate in this town, in Washington, between two very different views about which direction we should go in as a country” (emphasis added).

Those are the two poles in an historic battle over who runs the American economy.

For about 40 years before 2008, spending as a percentage of GDP was around 20%. In 2009, it rose to 25% and has remained at 24% of GDP. This isn’t just spending data. These numbers are a proxy for the standoff between the public economy and the private economy.

Some in the Democratic Party argue that this higher, “normal” spending level (the White House

projects 22+% of GDP going forward) is necessary to fulfill the commitments our politics have made to retiring baby boomers and others. The role of the private economy in the U.S. will be to support the long-term wants and needs in the public economy. President Obama is right: This is a choice between two paths into the American future, the clearest choice since the end of World War II. It is a mandate election.

Barack Obama is explicitly seeking a mandate to make the public economy pre-eminent. That is the unmistakable meaning of “You didn’t build that.” His opponent so far is talking about, but not seeking a mandate for, the other economy. One expects that in time Mitt Romney will seek a mandate equal to Mr. Obama’s.

A version of this article appeared July 26, 2012, on page A11 in the U.S. edition of The Wall Street Journal, with the headline: America’s Two Economies.

The Rise of Innovative State Capitalism

Joshua Kurlantzick, *BusinessWeek*, June 28, 2012

Over the past five years, as much of the developed world has staggered through crisis, a new type of capitalism has emerged as a challenger to laissez-faire economics. Across much of the developing world, state capitalism—in which the state either owns companies or plays a major role in supporting or directing them—is replacing the free market.

By 2015 state-owned wealth funds will control some \$12 trillion in assets, far outpacing private investors. From 2004 through 2009, 120 state-owned companies made their debut on the *Forbes* list of the world's largest corporations, while 250 private companies fell off it.

State companies now control about 90 percent of the world's oil and large percentages of other resources—a far cry from the past, when BP and ExxonMobil could dictate terms to the world.

Even as state capitalism has risen, some writers, business leaders, and politicians contend that such systems fail to encourage innovation, the key to long-term growth and economic wealth.

Ian Bremmer, the president of Eurasia Group and author of *The End of the Free Market: Who Wins the War Between Corporations and States*, argues that state capitalists “fear creative destruction—for the same reason they fear all other forms of destruction that they cannot control.”

In *China 2030*, a recent analysis of China's economy, the World Bank concurred, noting that the country needs “a better innovation policy, [which] will begin with a redefinition of government's role in the national innovation system ... [and] a competitive market system.”

It is a mistake, however, to underestimate the innovative potential of state capitalism. Rising powers such as Brazil and India have used the levers of state power to promote innovation in critical, targeted sectors of their economies, producing world-class companies in the process.

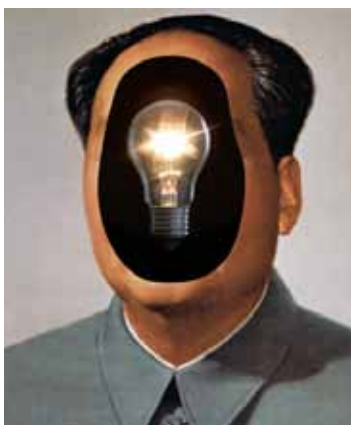
Despite its overspending on some state sectors, the Chinese government has nevertheless intervened effectively to promote skilled research and development in advanced industries. In so doing, the state capitalists have shattered the idea that they can't foster innovation to match developed economies. State capitalists' combination of government resources and innovation could put U.S. and European multinationals at a serious disadvantage competing around the globe.

State intervention in economic affairs runs against the established wisdom that the market is best for promoting ideas. At the same

time, throughout history, the governments of many developed nations have actively fostered groundbreaking companies, from Bell Labs in the U.S. to Airbus in Europe.

Brazil is perhaps the best current example of how a state-capitalist system can build innovative industries.

Successive Brazilian governments have intervened—with incentives, loans, and subsidies—to promote industries that otherwise would have needed long-term private investment to make them competitive with U.S. and European rivals. At the same time, Brazil preserved strong, independent management of state-backed firms, ensuring they did not become political boondoggles.



Three decades ago, for example, the Brazilian government gave aircraft manufacturer Embraer lucrative contracts and various subsidies, recognizing that it could potentially find a niche in producing smaller, regional aircraft. Private investors were dubious of Embraer's chances. Had it relied solely on private investment, the company probably would have failed; instead, it flourished, becoming the world's biggest maker of regional jets.

Similarly, by investing in deep-sea drilling technology, Petrobras, a state oil company with an independent management board, has made itself competitive with multinational giants such as Chevron, Shell, and BP.

By picking industries it could dominate and supporting them even when private capital was scarce, Brazil has created internationally competitive companies in a range of industries, from aerospace to clean energy. Today the government often backs companies as a minority shareholder or through indirect vehicles, allowing for corporate independence while still helping companies make important investments in research and skills. Many of Brazil's state-backed companies have survived the global slump far better than multinationals because they can rely on government assistance to see them through.

Combining government support with a mandate for profitability and independent management has yielded successful businesses in other state-capitalist economies. Singapore has used government incentives to push companies to move into industries such as solar and other clean energies, which, although not necessarily profitable now, will be the emerging technologies of this century.

A comprehensive 2009 paper by Harvard Business School looked at India's more than 40 state-owned science and engineering research laboratories,



which have used a similar type of public-private collaboration. It found that the Indian state labs had "more U.S. patents than all domestic [Indian] private firms combined."

In China, greater political interference in state-supported companies has been worse for profitability and innovation than in places like Brazil. And yet in recent years, China's score has steadily risen on the Global Competitiveness Index, a World Economic Forum ranking of nations, even as the score of the U.S. has dropped. (see right)

The rise of innovative state capitalists presents a more than formidable challenge to U.S. and European businesses; it could push multinationals out of some markets entirely. In oil and gas, for example, state companies already control most of the world's reserves, and as state companies like Petrobras become as innovative as multinationals, they will not require foreign companies for exploration, deepwater technology, or refining. In their own large domestic markets the innovative state capitalists will be able to match multinationals' technology, giving them dominance over mobile communications, high-end retailing, and other businesses.

Some developed countries may respond by either curbing state-capitalist companies' access to their markets or by intervening heavily in their own economies. Neither of these solutions is really viable. As the state capitalists' biggest companies expand their global operations, their technology, connections, and capital will be almost impossible to keep out. And aging, heavily indebted nations face huge challenges reforming their entitlement programs: They're in no position to pour the amount of resources into companies that Brazil, India, or China can.

Instead of trying to prevent—or worse, dismiss altogether—the rise of state-capitalist systems, U.S. and European companies and governments



The Global Competitiveness Index 2011-2012 rankings

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Country/Economy	GCI 2011-2012		GCI 2010-2011	
	Rank	Score	Rank	Change
Switzerland	1	5.74	1	0
Singapore	2	5.68	3	1
Sweden	3	5.61	2	-1
Finland	4	5.47	7	3
United States	5	5.43	4	-1
Germany	6	5.41	5	-1
Netherlands	7	5.41	8	1
Denmark	8	5.40	9	1
Japan	9	5.40	6	-3
United Kingdom	10	5.39	12	2
Hong Kong SAR	11	5.36	11	0
Canada	12	5.35	18	-2
Taiwan, China	13	5.26	13	0
Qatar	14	5.24	17	3
Belgium	15	5.20	19	4
Norway	16	5.18	14	-2
Saudi Arabia	17	5.17	21	4
France	18	5.14	15	-3
Austria	19	5.14	18	-1
Australia	20	5.11	16	-4
Malaysia	21	5.08	26	5
Israel	22	5.07	34	2
Luxembourg	23	5.03	20	-3
Korea, Rep.	24	5.02	32	-2
New Zealand	25	4.93	23	-2
China	26	4.90	27	1
United Arab Emirates	27	4.89	25	-2
United Arab Emirates	28	4.78	28	0
Ireland	29	4.77	29	0
Iceland	30	4.75	31	1
Chile	31	4.70	30	-1
Greece	32	4.64	34	2
Estonia	33	4.62	33	0
Kuwait	34	4.62	35	1
Puerto Rico	35	4.58	41	6
Spain	36	4.54	42	6
Bahrain	37	4.54	37	0
Czech Republic	38	4.52	36	-2
Thailand	39	4.52	38	-1
Turkey	40	4.47	32	-8
Poland	41	4.46	39	-2
Bermuda	42	4.44	43	1
Italy	43	4.43	48	5
Lithuania	44	4.41	47	3
Portugal	45	4.40	46	1
Iceland	46	4.36	44	-2
Cyprus	47	4.36	40	-7
Hungary	48	4.36	52	4
Panama	49	4.35	53	4
South Africa	50	4.34	54	4
Malta	51	4.33	50	-1
Qatar	52	4.33	62	10
Brazil	53	4.32	58	5
Mauritius	54	4.31	55	1
Azerbaijan	55	4.31	57	2
India	56	4.30	51	-5
Slovenia	57	4.30	45	-12
Mexico	58	4.29	66	8
Turkey	59	4.28	61	2
Moldova	60	4.27	49	-11
Costa Rica	61	4.27	56	-5
Iran, Islamic Rep.	62	4.26	69	7
Uruguay	63	4.25	64	1
Lebanon	64	4.24	70	6
Vietnam	65	4.24	59	-6
Romania	66	4.21	63	-3
Peru	67	4.21	73	6
Croatia	68	4.20	68	0
Slovak Republic	69	4.19	60	-9
Romania	70	4.19	60	10
Jordan	71	4.19	65	-6

Country/Economy	GCI 2011-2012		GCI 2010-2011	
	Rank	Score	Rank	Change
Kazakhstan	72	4.18	72	0
Mexico	73	4.16	75	2
Bulgaria	74	4.16	71	-3
Philippines	75	4.08	85	10
Croatia	76	4.08	77	1
Romania	77	4.08	67	-10
Albania	78	4.06	88	10
Moldova, P.R.	79	4.05	79	0
Botswana	80	4.05	76	-4
Trinidad and Tobago	81	4.00	84	3
Ukraine	82	4.00	89	7
Nicaragua	83	4.00	74	-9
Guatemala	84	4.00	78	-6
Argentina	85	3.99	87	2
Honduras	86	3.98	91	5
Algeria	87	3.96	86	-1
Georgia	88	3.96	93	5
Lebanon	89	3.95	92	3
Greece	90	3.92	83	-7
El Salvador	91	3.89	82	-9
Armenia	92	3.89	98	6
Moldova	93	3.89	94	1
Egypt	94	3.88	81	-13
Qatar	95	3.88	96	1
Mongolia	96	3.86	99	3
Costa Rica	97	3.85	109	12
Syria	98	3.85	97	-1
Qatar	99	3.84	90	-9
Bosnia and Herzegovina	100	3.83	102	2
Ecuador	101	3.82	105	4
Kenya	102	3.82	106	4
Bahamas	103	3.82	103	5
Benin	104	3.78	103	-1
Tajikistan	105	3.77	116	11
Ethiopia	106	3.76	119	13
Jamaica	107	3.76	95	-12
Bangladesh	108	3.73	107	-1
Qatar	109	3.73	110	1
Dominican Republic	110	3.73	101	-9
Qatar	111	3.70	104	-7
Suriname	112	3.67	n/a	n/a
Zambia	113	3.67	115	2
Ghana	114	3.65	114	0
Nicaragua	115	3.61	112	-3
Cameroon	116	3.61	111	-5
Mali	117	3.58	125	8
Pakistan	118	3.58	123	5
Cape Verde	119	3.58	117	-2
Tanzania	120	3.56	113	-7
Uganda	121	3.56	118	-3
Paraguay	122	3.53	120	-2
Belize	123	3.52	n/a	n/a
Venezuela	124	3.51	122	-2
Nepal	125	3.47	130	5
Kyrgyz Republic	126	3.45	121	-5
Nigeria	127	3.45	127	0
Mali	128	3.39	132	4
Cote d'Ivoire	129	3.37	129	0
Madagascar	130	3.36	124	-6
Togo	131	3.35	133	2
Zimbabwe	132	3.33	136	4
Monrovia	133	3.31	131	-2
Swaziland	134	3.30	126	-8
Lesotho	135	3.25	128	-7
Burkina Faso	136	3.25	134	-2
Mauritania	137	3.20	135	-2
Yemen	138	3.06	n/a	n/a
Angola	139	2.96	138	-1
Burundi	140	2.95	137	-3
Haiti	141	2.90	n/a	n/a
Chad	142	2.87	139	-3

federal governments robbed funds from universities for other programs, and even the idea of the government helping foster new industries such as clean energy became politically toxic. (See Solyndra.)

Developed nations still possess a huge advantage over their emerging-market competitors: The U.S. and countries in Europe have mature, large venture capital firms, while places like India don't. In emerging markets, when innovative companies become large enough to leave the state's embrace, they may have nowhere to turn. Venture capital giants, on the other hand, can help small groundbreakers grow. This advantage can be enormous for countries like the U.S. And in a world where the emerging-market giants are learning to innovate, any advantage will be critical.



A Jobs Compact for America's Future

Thomas Kochan, Harvard Business Review

Thomas Kochan, March 2012, Harvard Business Review. Summary and review prepared by Craig Knutson, Oklahoma Academy Research Group.

Kochan addresses the importance of “building the stronger human capital that US Businesses and the US economy need.” While the author is highly supportive of having all the key stakeholders at the table – business community, government, labor, and universities – he emphasizes the importance of a strategic and stated goal (20 million new, high quality jobs in America by 2020) and quotes Ralph Gamory (former IBM executive and Sloan Foundation President) in stating that “the principal actors in attaining (the nation’s) economic goals must be our corporations.”

Oklahoma must have a majority of the seats at the table dedicated to private sector input and participation. Devising the most effective/efficient forum and process for receiving their input is essential to becoming more internationally competitive. It is imperative that the key governmental leaders (Governor, Commerce Secretary, etc.) respond to their suggestions in an open, transparent and collaborative way.

But aside from process, what Kochan seeks to emphasize is the absolute importance of human capital to the competitiveness model. He correctly states that, in today’s economic world, the US suffers a “two-dimensional crisis: a persistent deficit in the number of jobs being created and an insufficient percentage of high-quality jobs.” In Oklahoma, ours is far more the latter than the former, which is reflected in a relatively low unemployment rate (number of jobs) and a relatively low per capital personal income level. High quality jobs are directly related to improved productivity, which leads to higher wages and fully-benefited positions. Our private sector must employ processes and people who can compete in the areas of innovation, product development

and service quality. He describes an approach called the “high-road strategy”, where companies: employ human capital that have strong, technical, problem solving and collaborative skills; make significant investments in training and development; and offer compensation systems that align with both the employee and employers interests.

For the private sector to be successful (competitive), there are certain things the public sector MUST do to SUPPORT the private sector jobs engine. First and foremost, “invest in infrastructure.” Kochan cites the estimates from the American Society of Civil Engineers that the US has a \$2.2 trillion backlog in investments in repairing the nation’s infrastructure.

He suggests that Wall Street leaders should help raise the private capital needed to build a national infrastructure fund or bank. This something a state like Oklahoma considers to address its significant infrastructure backlog. (see article in Volume 2).

Finally, on the productivity and educational front, his research suggests that, despite high levels of unemployment, there are still shortages of medium- and high-skilled workers. More apprenticeships programs must be created and the private companies that have adopted such a strategy have been financially and competitively successful. Better utilizing the strengths of local universities in the areas of IT, software engineering and the life sciences have also proven to be successful strategies for private firms.

While it may “take a village,” the nation’s (Oklahoma’s) job engine must remain in the private sector, where risks and rewards are understood and valued. The remaining “helix members” (public sector and universities) have a challenging but essential role to play in minimizing risks and maximizing rewards.



We Need Purposeful R&D

Tom Walker, CEO, i2E, Oklahoma City and Tulsa

Oklahoma's economy is doing very well. State revenues are up. We have hundreds of millions in our State rainy day account. At the time of this writing, our unemployment rate is 4.8 percent. We have an NBA franchise that most of us wouldn't have dreamed of ten years ago. We are an Olympic site for rowing. The oil and gas companies are running strong.



But what about the next ten years and beyond?

It's difficult to think about what the shape of our future economy should be, when our traditional industries are doing so well. But if Oklahoma wants to continue to prosper, we must consider what we want look like a decade from now.

One could argue that even we know from experience the economic importance of innovation and of diversifying Oklahoma's economy. More than ever, Oklahomans are dependent on our traditional industries, while in most innovation categories, Oklahoma ranks in the bottom ten.

Consider these statistics:

- According to the Milken Institute ¹, Oklahoma ranks 50th in Research and Development Inputs, a measure of a state's ability to attract various types of federal, industry, and academic funding. This is a key measure of a region's competitiveness in science and technology and is extremely important because R&D funding supports the research labs, universities, and innovative companies that educate the workforce and invent and develop new

technologies and products. This benchmark puts Oklahoma worse than all other states in having the ecosystem to turn our science and technology capabilities into companies and high-paying jobs.

- In 2011, only three Small Business Innovative Research (SBIR) grants were awarded to Oklahoma companies ¹. Only Alaska, Mississippi, North Dakota, the District of Columbia, and Puerto Rico received fewer.
- While 110 SBIR proposals were submitted from our state, our success rate was less than 3 percent. Only Puerto Rico with zero SBIR awards had less.

SBIRs are simply one indicator of a state's innovation success.

- Oklahoma ranks 39th in committed federal funding for science and engineering to universities and colleges.
- Oklahoma ranks 48th in terms of R&D as a percentage of gross domestic product.
- Oklahoma received an "F" grade for K-12 science education curriculum and instructors according to the 2012 report from the Thomas B. Fordham Institute, putting our state in the bottom 10.

Assuredly, Oklahoma isn't California. But neither are North Carolina, Virginia, Texas, Indiana, or Florida, yet these states are making investments in research and development a priority.

Instead, a result of this year's legislative session was the demise of the \$180M research endowment through the state's Economic Development Generating Excellence (EDGE) program.



This causes one to ask, as Oklahomans, what do we really believe about R&D?

Do we really believe that ... ?

... successful state and regional economic development is strongly tied to innovation?

... technology based entrepreneurship is the key to high value job creation?

... the scientists and inventors in Oklahoma's research institutions, foundations, and universities have the drive and ability to produce ground-breaking technological advances?

... these inventions can make it to the marketplace on their own, without emphasis and targeted investment by public and private sector leaders?

... it is possible to move science and technology from the lab bench into the commercial sector creating products and services that create jobs without a coordinated commitment supported by emphasis and investment from public and private sector sources?

Our current strategy toward innovation is simply widening the gap between 50th and 49th. When we are last or declining fast in most R&D indicators, change needs to take place.

Oklahoma needs to invest in long-term research and development in our state. We don't have to pay for it entirely with Oklahoma dollars if we improve the culture in the state to encourage our resident researchers to access more federal funding and other types of R&D funding.

Oklahoma should create a matching program for all those scientists who secure federal grants. Our goal should be to match every dollar one-to-one. We have laws on the books that reflect where we need to go and what the state can do to help. We need to create/fund programs accordingly. The top ranking states in R&D provide significant matching grants to scientists who are awarded federal funds. The bottom ranking states don't.

Oklahoma should put a challenge out to our public and private research institutions that if they recruit in world-renowned scientists with federal research portfolios into the state, the state will provide a one for one cash match to get those scientists here. Recent reports and studies have applauded Oklahoma as a wonderful place to live, with a high quality of life and a business-friendly attitude. Let's capitalize on that to attract leading scientists from other states into ours. The Top Ranking R&D States assist in matching funds to attract successful scientists to their region. The bottom ranking states don't.

Oklahoma should create a rational venture capital support program to support Oklahoma entrepreneurs who are scratching it out every day in this state, trying to build the next headquarters corporations.

OK should continue investing in the entrepreneurial infrastructure in the state. As recent investments demonstrate, this pays off. Kiplinger voted Oklahoma City among the top ten cities to start a business based on low startup costs and government support.

Private sector leaders must get in the game. R&D is everyone's responsibility—not just scientists' or the state's. There are regions where every CEO of every major company is involved in statewide growth of R&D. They serve on boards.

They write checks. Imagine the potential outcome if our private sector leaders—especially the CEOs of Oklahoma's largest companies and the firms in our mainstay industries of oil and gas - become champions of a statewide R&D ecosystem.

Turning our back on R&D isn't going to work. That strategy will just make us poorer as a state. Innovation and entrepreneurship keep a region thriving. Oklahoma needs to support both.

¹ *State Technology & Science Index 2010*, DeVol, Klowden, and Yeo, Milken Institute, www.milkeninstitute.org.



Social Impact Bonds?

Richard Wansley, PhD, Center for Health Sciences, Oklahoma State University, Tulsa

Social Impact Bonds (SIBs): Investing Taxpayer's Money on Outcomes

As a faculty member in a medical school, I'm aware of the rapid changes in the nation's health care system. Prominent in these changes is the practice of Evidence-Based Medicine (EBM) which simply means that decisions are based on what is known from research. For me, personally, that's great, because getting the best possible service based on proven outcomes is the first order of business when it comes to the health of my family.

Out of Great Britain comes an innovative approach to pay for services aimed at solving complex social issues, a financial tool with EBM characteristics. The so-called Social Impact Bond (SIB) enables government to solicit private investment in support of social changes that have an economic benefit to the taxpaying public. In Britain, the first SIB has raised funds for services designed to reduce reoffending by released prisoners. If the recidivism rate is lowered to a specified level, investors will earn back their money plus interest. If there is no improvement or the rate is less than the targeted outcome, then investors lose money. So, who guarantees the bond? Government does. Why? Because, guaranteeing repayment plus interest costs less than putting offenders back in prison.

SIB is an attractive option for several reasons, especially during hard economic times. Government benefits by sharing costs with private investors. Social service providers benefit by having an expanded pool of dollars to support their work. And, society benefits through a public good rendered by way of a public-private partnership that rewards innovation and proven outcomes.

***"Trust me – it works!"
"Oh, really? Prove it!"***

However, if SIBs are to work, government must be willing to align its interests with the private sector and perform due diligence on an SIB agreement. In turn, social service providers must focus on outcomes and not just process – as in the case of the British project, success is measured by a change in the rate of recidivism (outcome) and not the number of people served by the agencies (process). Such cultural changes in the way government and social services do business can be difficult but necessary to ensure success.

Currently, Minnesota, New York, and Massachusetts have prepared enabling legislation for their own versions of an SIB. The US Department of Labor has announced funds for an SIB-like initiative, called "Pay for Success Projects". The mayors of New York and Baltimore are exploring how SIBs could benefit a local community.

An interesting extension of the SIB model might be applying this concept to interactions between government agencies, an Interagency SIB. For example, why not have an agreement between a Medicaid agency and a health department where the Medicaid agency financially rewards the health department if the department proves that its efforts result in people quitting their use of tobacco, thus reducing the agency's cost in paying for services to those who suffer tobacco-related diseases?

Social Impact Bonds appear to be good "Evidence-Based Government" and, as such, may be a valuable tool for Oklahoma government as it seeks to meet its obligation for providing the highest quality services with the best possible outcomes at the least cost to taxpayers.



Investing in the “In” Crowd

Mickey Hepner, PhD, Oklahoma Academy Research Group, Edmond

*“I heartily accept the motto, ‘That government is best which governs least.’”—Henry David Thoreau, *Civil Disobedience*, 1849.*

Thoreau was wrong. While throughout history there are countless examples of governmental authority dampening freedom, limiting liberty and cramping commerce, history also tells us that good government can protect market forces, can enhance individual liberty and cultivate commerce. In short, some government is not only necessary...but good.

This is not a surprise. America’s historical investment in education has led to a more productive populace. Our investments in healthcare have created a more healthy workforce. Our investments in rail and highways have made people and products more portable. Our investments in prisons have made our streets more safe. Each day, we benefit from good government services.

These days though, the Thoreau perspective is making a renaissance. Many political leaders argue that government does too much—that we have too much government support for education, healthcare, roads and prisons. In the March issue of the *Harvard Business Review* noted business scholars Michael E. Porter and Jan W. Rivkin make a different case—that America is facing a long-term threat to our prosperity *unless we make more* much-needed investments.

Specifically, Porter and Rivkin argued that to overcome the economic challenges we face in the coming decades, our governments—at the federal, state, and local levels—need to make enhanced investments in individuals, infrastructure, innovation and institutions. Each of these are designed, in their own way to make people more productive and firms more profitable.

First, for our nation to continue to be an economic power Porter and Rivkin argue that we must be making adequate investments in our people—preparing them to become the educated workforce

of tomorrow. This involves more than just spending more...but also spending correctly to prepare our students with the skills tomorrow’s economy needs. America’s children repeatedly underperform the most advanced nations in mathematics proficiency. Unless we change this, we are destined to concede the high-tech jobs of tomorrow to the world’s more educated nations.

Second, Porter and Rivkin suggest that we invest more in infrastructure. In the past this has meant building the rails, highways, electrical network, and phone lines to boost firm productivity and improve the quality of life for all Americans. Today, this still involves helping firms get their products to market, and helping consumers get to the products. More and more, this means creating the high-speed data network that consumers and firms rely upon.

Third, Porter and Rivkin call on our governments to invest in innovation. In Oklahoma, this was the purpose of the EDGE fund—a \$1 billion endowed fund to help finance high-tech innovations. Last year, the Governor’s Task Force on economic development called for a similar (and new) investment program in Oklahoma.

Finally, Porter and Rivkin urge our leaders to invest in our institutions. It is no secret that our political system is broken. It is no secret that many want to dismantle government, instead of building the better government we need. Porter and Rivkin remind us that we cannot remain prosperous, without beneficial institutions.

Investing more in individuals, infrastructure, innovation and institutions—what I call the “In-Crowd” is necessary for us to continue to be the world’s most important economy. If don’t do this, then developing countries like China and India—who are making massive investments in all these areas—will overtake us soon.

Being competitive requires us to take the necessary steps to compete. One important step, is for us to invest in the “In-Crowd”.



State Taxes and Economic Growth

Cynthia Rogers, Ph.D, Associate Professor of Economics, University of Oklahoma, Norman

What the Literature Suggests

It is difficult to pin down the impact of state tax policy on economic growth from either a theoretical or empirical approach. Below I discuss conclusions from the economics literature as they pertain to state tax policy.

Because not all private and public spending is equally productive in the state economy, the overall impact of state spending on economic growth is indeterminate.

Taxes redirect money from private to public spending. The impact on economic growth depends on the change in productivity associated with the redirected flow of funds.

If a dollar in taxes goes toward a public good that contributes broadly toward productive activities (for example, highway investment lowers the costs of transporting goods and workers) then the overall value of a dollar spent in the public sector would outweigh the value in the private sector.

However, some public spending does not contribute to general productivity (e.g., spending on child welfare) and thus would not (nor is it intended to) contribute directly to state economic growth. Similarly, not all private spending contributes equally to the state economy. For example, an individual could spend part or all of a tax cut on an out-of-state vacation. Or, an individual might spend all of a tax cut locally on groceries and rent.

Empirical analysis is inconclusive.

The extensive body of research which investigates the relationship between observed tax variables and state economic growth outcomes also fails to provide clear guidance for tax policy. The dynamic relationships between tax and non-tax factors, as well as the idiosyncratic nature of state economies create challenges that are difficult to address in empirical investigations.

Establishing causality is difficult.

Tax burdens and economic growth can be observed to move together. States with low tax burdens are commonly shown to display relatively fast (and statistically significant) economic growth. This, however, does not establish that a change in tax policy would cause a state to grow (causality). It does not follow, for example, that I could be tall like Kevin Durant of the OKC Thunder if only I played in the NBA (since I observe that all NBA players are tall). In fact, Kevin Durant's physical assets led him to seek an NBA career. In the same way, a state's underlying economic conditions drive tax policy changes. States resort to tax increases when faced with fiscal stress for obvious reasons (elected officials who raise taxes are not very popular!). Accordingly, it is very difficult to uncover the nature of causality between taxes and economic growth using naïve analysis.

States are unique

Idiosyncratic socio-economic, geographic, and cultural characteristics are important for predicting tax policy impacts. Even if a policy is effective for one state, it may not be so for another. It does not follow, for example, that I would be wealthier if I pursued an NBA career like Kevin Durant. I don't have the necessary physical attributes (I'm 5'2" and over 40). Differences in state attributes are important for public policy in much the same way. For example, Texas can impose hefty hotel/motel taxes to take advantage of its extensive coastline while Oklahoma has no such advantage.

Furthermore, it is difficult to emulate tax policy in another state because this would involve changing multiple taxes. For instance, Oklahoma would need to eliminate the personal income tax, broaden the sales tax base, AND increase property taxes in order to emulate Texas's tax system. And still Oklahoma would not be able to emulate the major port and extensive coastline that afford Texas advantages.



Unobservable factors related to tax policy.

Idiosyncratic differences are also important because they may be systematically related to tax policy and economic growth. In particular, several states rich in natural resources including Alaska, Wyoming, and Texas, do not impose personal income taxes. When gas and oil prices rise, these (no-income tax) states experience favorable growth. Although having no-income taxes can easily be connected with favorable growth for these states in oil-boom periods, the role of tax policy is difficult to isolate. As this example demonstrates, impacts of such unobserved non-tax factors that are related to tax policy can obfuscate conclusions about the impact of state tax policy on economic growth.

Tax policy changes are complex.

Given balanced budget and expenditure growth restrictions, a tax cut must be achieved with either decreases in state spending or increases in other taxes to offset revenue losses. Notably tax cuts financed by reduced spending on core public services—as opposed to transfer payments—have been linked with negative growth consequences (Helms, 1985, page 579; Mofidi and Stone, 1990, page 691; Bartik, 1991, page 48; Tannenwald, 1996, page 25; Lynch, 1996, page 19). Similarly, benefits of cutting one tax source would be offset by increases in other taxes.

Such changes in tax mix have important consequences for equity and stability of taxes at the state and local level. For example, a loss in state-local transfers or reduction of state support for education would push local governments to either reduce local spending or to increase local taxes (sales and property) and fees.

Over 500 jurisdictions impose local sales taxes in Oklahoma. Combined state, county and local rates are among the highest in the nation. Consequently, an increased reliance on local sales taxes would cause more competition for sales tax revenues among local jurisdictions and increase tax avoidance via cross border or internet shopping. Furthermore, sales taxes are generally thought to be more regressive than income taxes.

Education and training programs have positive impacts on economic development.

Although taxes and incentives obviously matter, predictions of tax policy impacts are illusive to the extent that they impact both tax and expenditure items. In contrast, research does offer clear guidance regarding the efficacy of particular programs. For example, recent research provides credible evidence of the long term benefits of investments in quality pre-k programs (Bartik 2011). Unlike tax policies, education and training programs can be readily adapted across states. Thus, a fruitful focus for policy is to promote policies that give taxpayers a credible bang for their buck.

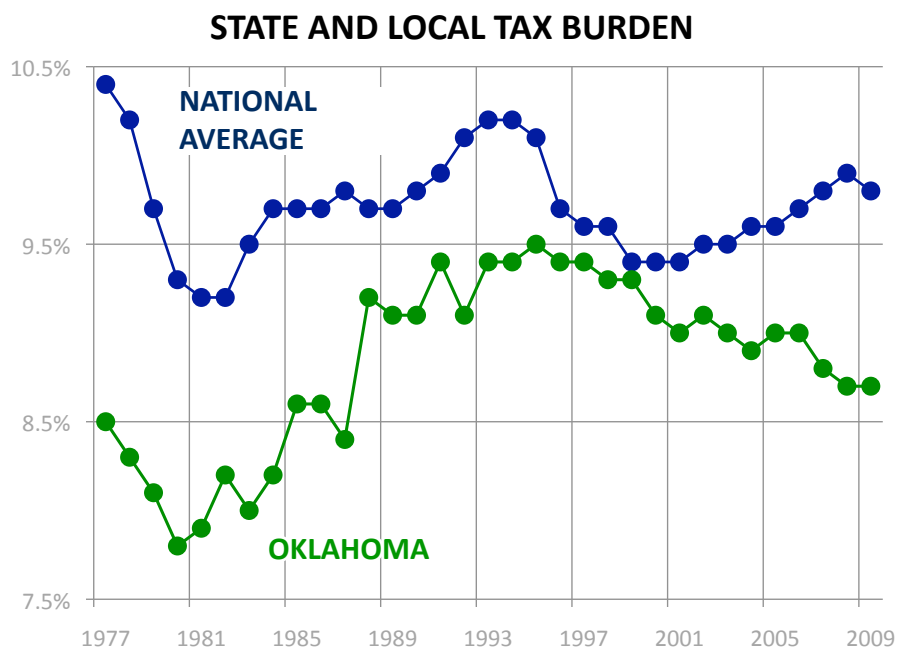
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The Burden of Oklahoma's State/Local Taxes

Tax Foundation, Washington, DC and Oklahoma Academy 2007 Town Hall



State and Local Tax Burden 1979-2009 (above)

Oklahoma has the 14th lowest overall state and local tax burden in the country, according to 2009 data made available by the Tax Foundation. In 2009, Oklahoma had a per capita tax rate of 8.7 percent. Source: Presented by the State Chamber Research Foundation. <http://oklahomascarecard.com>

State and Local Taxes for 2007

2010 Academy Town Hall on Municipal Government

Taxation: Are Oklahomans “over-taxed” or “under-taxed” by state and local governments? That conclusion is a judgement and subjective. There are no measures for over or under taxation. However, we can measure the calculated burden of taxes in one state relative to another.

Comments and Interpretation: The table below offers ratios of the tax burden on state residents caused by all forms of state/local taxes paid by individuals and corporations. For example, Oklahomans will earn \$122.8 billion of personal income in a year. Oklahomans will pay an aggregate of \$11.95 billion in all forms tax. That means that 9.7% of all income earned by individuals is paid to governments in all form of taxes. Oklahoma will rank 43rd in the country for tax burden - well below the national average of 10.8%. If Oklahomans carried a state/local tax burden simply equal to the national average effort - Oklahoma state government and municipalities would be offered an additional \$1.3 billion every year. Consider the 2011 and 2012 projected shortfalls then decide if we are over or under taxed for the services we want. (Mickey Hepner, PhD, Professor of Economics & Director of UCO Policy Institute University of Central Oklahoma, Edmond).



State/Local Tax Burden by State 2009

Tax Foundation, Washington, DC

	STATE	PCT ¹	HOME ²	OTHER ³	TOTAL ⁴	PCI ⁵
1	New Jersey	12.2%	\$4,814	\$1,937	\$6,751	\$55,303
2	New York	12.1%	\$4,914	\$1,243	\$6,157	\$51,055
3	Connecticut	12.0%	\$5,151	\$2,106	\$7,256	\$60,310
4	Wisconsin	11.0%	\$3,418	\$1,009	\$4,427	\$40,321
5	Rhode Island	10.7%	\$3,290	\$1,358	\$4,647	\$43,372
6	California	10.6%	\$3,874	\$1,037	\$4,910	\$46,366
7	Minnesota	10.3%	\$3,520	\$1,131	\$4,651	\$45,220
8	Vermont	10.2%	\$2,932	\$1,249	\$4,181	\$41,061
9	Maine	10.1%	\$2,870	\$963	\$3,832	\$37,835
10	Pennsylvania	10.1%	\$3,100	\$1,089	\$4,190	\$41,672
11	Massachusetts	10.0%	\$3,868	\$1,448	\$5,316	\$53,029
12	Maryland	10.0%	\$3,798	\$1,419	\$5,218	\$52,130
13	Illinois	10.0%	\$3,418	\$1,177	\$4,596	\$46,079
14	Arkansas	9.9%	\$2,392	\$889	\$3,281	\$33,238
15	Nebraska	9.8%	\$2,842	\$1,118	\$3,960	\$40,349
	UNITED STATES	9.8%	\$3,057	\$1,103	\$4,160	\$42,539
16	North Carolina	9.8%	\$2,649	\$934	\$3,583	\$36,650
17	Oregon	9.8%	\$2,732	\$1,029	\$3,761	\$38,527
18	Ohio	9.7%	\$2,781	\$871	\$3,652	\$37,600
19	Kansas	9.7%	\$2,697	\$1,214	\$3,911	\$40,302
20	Utah	9.7%	\$2,355	\$994	\$3,349	\$34,596
21	Michigan	9.7%	\$2,713	\$853	\$3,565	\$36,880
22	Hawaii	9.6%	\$3,356	\$1,043	\$4,399	\$45,725
23	Delaware	9.6%	\$2,432	\$1,658	\$4,091	\$42,688
	Washington, DC	9.6%	\$4,089	\$1,986	\$6,076	\$63,492
24	Iowa	9.5%	\$2,657	\$1,031	\$3,688	\$38,688
25	Indiana	9.5%	\$2,501	\$895	\$3,396	\$35,767
26	North Dakota	9.5%	\$2,707	\$1,185	\$3,892	\$41,088
27	West Virginia	9.4%	\$2,211	\$823	\$3,034	\$32,299
28	Idaho	9.4%	\$2,227	\$1,049	\$3,276	\$34,973
29	Washington	9.3%	\$3,141	\$1,267	\$4,408	\$47,361
30	Kentucky	9.3%	\$2,227	\$833	\$3,059	\$32,959
31	Florida	9.2%	\$2,713	\$1,184	\$3,897	\$42,146
32	Georgia	9.1%	\$2,411	\$939	\$3,350	\$36,738
33	Virginia	9.1%	\$3,157	\$1,235	\$4,392	\$48,210
34	Missouri	9.0%	\$2,378	\$1,047	\$3,425	\$37,853
35	Montana	8.7%	\$2,111	\$1,105	\$3,216	\$36,784
36	Mississippi	8.7%	\$1,863	\$815	\$2,678	\$30,689
37	OKLAHOMA	8.7%	\$2,266	\$993	\$3,259	\$37,464
38	Arizona	8.7%	\$2,177	\$964	\$3,140	\$36,228
39	Colorado	8.6%	\$2,776	\$1,234	\$4,011	\$46,716
40	Alabama	8.5%	\$2,029	\$938	\$2,967	\$34,911
41	New Mexico	8.4%	\$2,079	\$918	\$2,997	\$35,780
42	Louisiana	8.2%	\$2,034	\$1,002	\$3,037	\$37,109
43	South Carolina	8.1%	\$1,845	\$896	\$2,742	\$33,954
44	New Hampshire	8.0%	\$2,185	\$1,581	\$3,765	\$46,828
45	Texas	7.9%	\$2,248	\$949	\$3,197	\$40,498
46	Wyoming	7.8%	\$2,332	\$1,873	\$4,205	\$53,931
47	Tennessee	7.6%	\$1,851	\$902	\$2,752	\$36,157
48	South Dakota	7.6%	\$1,842	\$1,199	\$3,042	\$40,082
49	Nevada	7.5%	\$1,988	\$1,323	\$3,311	\$44,241
50	Alaska	6.3%	\$1,893	\$1,080	\$2,973	\$46,841

1 - State and local taxes paid as a percent of per capita income. 2 - state and local taxes paid to home state.
3 - state and local taxes paid to other states. 4 - total state and local taxes paid. 5 - per capita income.



Size & Role of Government

Gene Perry, Policy Analyst, Oklahoma Policy Institute

Oklahoma's state and local governments have been essential to creating a vibrant and successful state. Without them there would not have been land runs, free public education, low-cost public colleges, highways and turnpikes, ports and airports, or support for those who cannot support themselves. All Oklahomans benefit from government spending each day. Public structures--laws, infrastructure like highways, public utilities and flood control, education, and service agencies--create the environment necessary for strong economic development and quality of life. As we consider the most appropriate role and size of Oklahoma government, below are some important facts to keep in mind:

State Spending

- Oklahoma governments spent \$7,515 per person in 2008, well below the national average of \$9,311. In 2007, we ranked 43rd among the states in combined state and local spending per person, according to CQ Press.
- Of the total 2008 government spending of nearly \$27 billion, the State of Oklahoma spends 55 percent. The rest is spent by local governments.
- The largest share of state spending from all sources goes to health services (29.2 percent in 2011) and education (27.5 percent).
- Appropriations by the Legislature (\$6.7 billion in FY '11) represent less than half of the state's total spending but are essential to funding state services. Just over half of all appropriations goes to education and about one-fourth funds health and social services.
- Nearly 90 percent of total state appropriations go to the ten largest agencies: Common Education [34.2%], Higher Education [13.9%], OHCA (Medicaid) [13.6%], Human Services [8.3%], Corrections [6.8%], Mental Health [4.5%], Transportation [3.0%], Career Tech [2.0%], and Public Safety [1.3%].

- Total state expenditures have increased in recent years because more federal dollars were passed through the state under the stimulus and for safety net programs that saw rising demand during the recession. Areas that are not heavily supplemented with federal money, like education and public safety, are experiencing flat or declining funding.

Local Spending

- About 1,900 government entities provide public services in Oklahoma, most of them local governments. Oklahoma's local governments spent over \$12 billion on public services in 2008, about \$3 billion less than the state government.

- Education spending of slightly over \$5 billion represented just less than half of all local government spending in 2008.
- Five other functions all spent between \$900 million and \$1.1 billion, or between 8 and 10 percent each of total local spending. These are:

Health and social services, mainly publicly-owned hospitals, but also county health departments;

Transportation, about two-thirds of which is for local roads and streets and most of the rest for airports;

Public safety, which includes city police departments, county sheriffs and jails, and city and rural fire departments;

Environment and housing, including sewage, parks and recreation, community development and building regulation, and solid waste management; and

Utilities, including city and rural water systems and publicly-owned electric utilities.



State Revenues

- In FY 2011, state revenue was comprised of \$7.53 billion from taxes, \$7.49 billion from federal grants, and \$2.22 billion from other sources.
- The share of income Oklahomans pay in state taxes has fallen to its lowest point in decades. In 2010, Oklahomans paid just 5.5 percent of their total income in state taxes. This includes sales tax, income tax, motor vehicle tax, excise taxes on oil and gas production, and all other state taxes. This is a major drop from the average of 6.9 percent over the past three decades, and it is well below the previous low of 6.1 percent in 1987 and 2009.
- In 2007 and 2008, collections grew but less rapidly than the state economy as the income tax cuts of the mid-2000s phased in. Once the state was hit by the recession in 2009, collections fell for two straight years, with 2010 collections coming in 15 percent below 2008.
- Even before the latest steep drop, Oklahoma was among the lowest tax states in the nation, ranking 40th in total state and local taxes as a share of personal income in 2009.

Oklahoma's Needs

State leaders have identified a need for greater public investment in numerous areas. A few examples of how Oklahoma's investments in core services are falling behind our needs:

- Student achievement in public schools must be improved to meet increasingly strict testing requirements. State aid funding for common education remains more than \$200 million below its level of 2008, while enrollment has grown by 25,000 students.
- Oklahoma is under a court mandate to reform the child welfare system. According to the Pinnacle Plan, reforms are expected to cost an additional \$150 million annually (\$100 million state, \$50 million federal).

- Growing incarceration and an epidemic of mental health and substance abuse problems is threatening to overwhelm the criminal justice system. According to Department of Corrections Director Justin Jones, the DOC is at its lowest staffing since 1995, even though prison population has grown by over 8,000 offenders for this same period. Mental health and substance abuse treatment beds have been eliminated both inside and outside of prisons during the past three years of budget cuts. Job training and other programs aimed at reducing recidivism have also been cut.
- The Oklahoma Department of Commerce projects that the number of college graduates in Oklahoma will be inadequate to meet businesses' labor force needs. Out of all the new jobs projected to be created between 2010 and 2020, 48.9 percent require some college and 23.7 percent require a bachelor's degree. That compares to only 31.3 percent of Oklahomans with some college and 15.4 percent with a bachelor's degree in 2010.
- Chronic underfunding has left 6,500 families on a waiting list for home- and community-based services for persons with developmental disabilities, some since 2004. Providers of home- and community-based services have not received a rate increase in over five years, making it ever-harder to attract and retain qualified staff and threatening access to care.

Conclusion

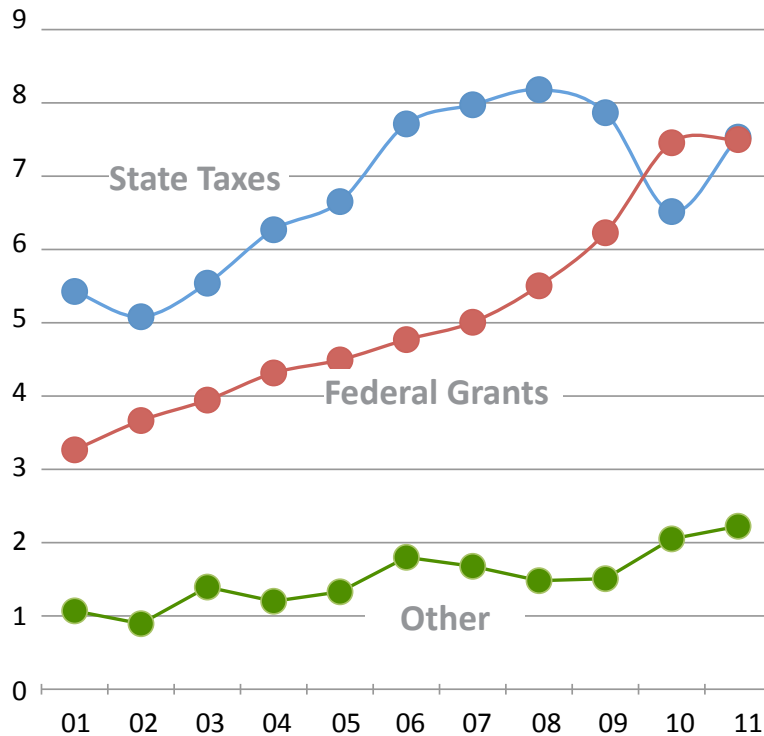
Rather than being bloated and in need of right-sizing downward, the question we must now face is whether years of underfunding have shrunk state government to the point where it is no longer capable of performing the core functions that Oklahomans expect: educating our children, training our workforce, maintaining our infrastructure, protecting our communities, and aiding our most vulnerable family members and neighbors.

Paul Shinn and David Blatt contributed research for this article. For additional information, see Oklahoma Policy Institute's Online Budget Guide at <http://okpolicy.org/online-budget-guide> and our Budget Information page at: <http://okpolicy.org/current-budget-information>



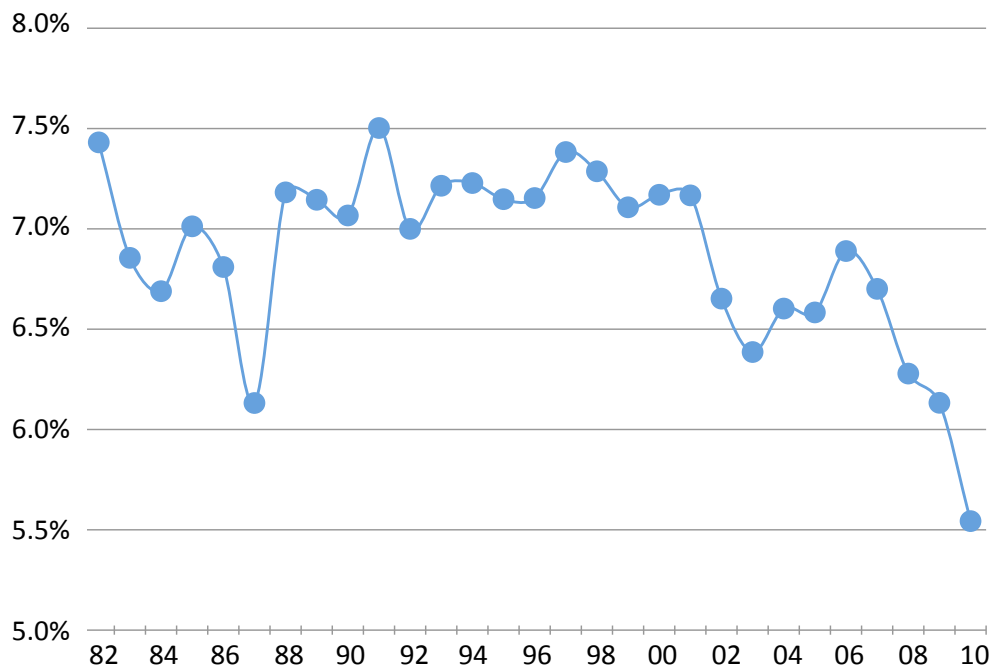
STATE GOVERNMENT REVENUES Oklahoma FY 2001 - 11 (billions)

Source: Office of State Finance



STATE TAX COLLECTIONS Per Share of State Personal Income, FY 1982-2010

Source: Office of State Finance



Section 7

Academia



Rethinking School

Stacey Childress, Next Generation Learning Group, Bill & Melinda Gates Foundation

“Rethinking School” by Stacey Childress published in the Harvard Business Review (HBR) 3/2012 Summary by Craig Knutson, Oklahoma Academy Research Group. See Amy Ford essay in Section I.

The author states if today’s college graduation rates remain as they have for the past several decades, by 2018 the US “will be short at least 3 million college-educated workers for the projected 101 million jobs that will require a degree.”

Her article suggests more powerful tools for both teachers and students, and specific investments (financial and otherwise) local/state/federal governments as well as the business community need to make to avert the aforementioned shortages.

Childress’ focus is on K-12 education; “by practically any measure, the quality of K-12 education in the United States is dismal.”

The implications are numerous and enormous in terms of being internationally competitive. Poor K-12 achievement has a direct impact on success in higher education. As Childress points out, while American students have been getting into college in ever increasing numbers over the past 20+ years, the college graduation rate has not risen. On the other hand student loan debt has exploded and the K-12 system is spending twice the money per student to achieve the same results.

In less than 20 years the ranking of the percentage of US 25-34 year olds holding at least a baccalaureate degree went from FIRST place to

10th, and it continues to drop. Conversely, the percentage of jobs needing a college degree has gone from 37% in 1992 to almost 45% today. We’re not likely to be able to reverse the latter trend but there is much we can do to reverse the former.

Childress reminds the reader that over forty years of educational research confirms that the quality of a student’s teacher is the biggest factor in

boosting that student’s academic performance. Thus, improved teacher training programs/methods that have generated documentable improvements are essential. But she also suggests that new generations of “sophisticated adaptive courseware,” combined with the best teacher- and computer-delivered instruction need to be employed.

A Commerce Department study reported that Education ranked LAST in deployment of technology relative to number of employees. And where it was used, it wasn’t used to do anything differently, suggesting a huge loss in productivity.

Personalized learning, using technology and software, helps both the student and teacher. Furthermore, research shows that individually tutored students perform two standard deviations higher than (or better than 98% of) their traditionally taught peers.

Childress concludes with a list of “what can be done” items (inset), focusing more on what local/state governments and the business community can do. From an Oklahoma perspective, all seem to be doable provided the political will exists.

- *Allow students to earn credit on the basis of mastery of skills rather than attendance;*
- *Amend textbook adoption rules and spending policies to allow school to use high-quality digital materials, not just printed curricula;*
- *Resist locking in teachers’ roles in teacher-effectiveness policies;*
- *Eliminate fixed limits on class size and charter schools; and for businesses ...*
- *Advocate for personalized learning in their communities;*
- *Participate in programs that explicitly connect skills to careers;*
- *Direct philanthropic funds and volunteer time to such programs.*



Education = Healthy Economy

George Schultz and Eric Hanushek, Hoover Institution, Stanford University

Mr. Shultz is a former secretary of State and a distinguished senior fellow at Stanford University's Hoover Institution. Mr. Hanushek is a senior fellow at Hoover and a member of the Koret Task Force on K-12 Education.

A version of this article appeared May 1, 2012, on page A15 in the U.S. edition of The Wall Street Journal, with the headline: Education Is the Key to a Healthy Economy.

In addressing our current fiscal and economic woes, too often we neglect a key ingredient of our nation's economic future—the human capital produced by our K-12 school system. An improved education system would lead to a dramatically different future for the U.S., because educational outcomes strongly affect economic growth and the distribution of income.

Over the past half century, countries with higher math and science skills have grown faster than those with lower-skilled populations. In the chart nearby, we compare GDP-per-capita growth rates between 1960 and 2000 with achievement results on international math assessment tests. The countries include almost all of the Organization for Economic Cooperation and Development (OECD) countries plus a number of developing countries. What stands out is that all the countries follow a nearly straight line that slopes upward—as scores rise, so does economic growth. Peru, South Africa and the Philippines are at the bottom; Singapore and Taiwan, the top.

The U.S. growth rate lies above the line because—despite the more recent shortcomings of our schools—we've long benefited from our commitment to the free movement of labor and capital, strong property rights, a limited degree of government intrusion in the economy, and strong colleges and universities. But each of these advantages has eroded and should not be counted on to keep us above the line in the future.

Current U.S. students—the future labor force—are no longer competitive with students across the developed world. In the OECD's Programme for International Student Assessment (PISA) rankings for 2009, the U.S. was 31st in math—indistinguishable from Portugal or Italy. In “advanced” performance on math, 16 countries produced twice as many high achievers per capita than the U.S. did.

If we accept this level of performance, we will surely find ourselves on a low-growth path.

This doesn't have to be our fate. Imagine a school improvement program that made us competitive with Canada in math performance (which means scoring approximately 40 points higher on PISA tests) over the next 20 years. As these Canadian-skill-level students entered the labor force, they would produce a faster-growing economy.

How much faster? The results are stunning. The improvement in GDP over the next 80 years would exceed a present value of \$70 trillion. That's equivalent to an average 20% boost in income for



every U.S. worker each year over his or her entire career. This would generate enough revenue to solve easily the U.S. debt problem that is the object of so much current debate.

The drag on growth is by no means the only problem produced by our lagging education system. Greater educational disparity leads to greater income-distribution disparity. If we fail to reform our K-12 education system, we'll be locking in inequality problems that will plague us for decades if not generations to come.

Take our own state of California. Once a leader in education, it is now ranked behind 40 other U.S. states in math achievement, placing it at the level of Greece and foreshadowing a bleak future of ballooning debt and growing income disparity. But the averages mask the truly sad story in the Latino population, soon to become California's dominant demographic group.

Hispanics attending school in California perform no better than the average student in Mexico, a level comparable to the typical student in Kazakhstan. An alarming 43% of Hispanic students in California did not complete high school between 2005-2009; only 10% attained a college degree.

Anyone worried about income disparity in America should be deeply disturbed. The failure of the K-12 education system for so many students means that issues associated with income distribution—including higher taxes and less freedom in labor and capital markets—will be an ever-present and distressing aspect of our future.

Examples abound of the ability to make sharp improvements in our K-12 system. By not insisting on immediate and widespread reform we are forgoing substantial growth in our standard of living. The problem is obvious. The stakes are enormous. The solutions are within our reach.

From the DaVinci Institute

The pace of change is mandating that we produce a faster, smarter, better grade of human being. Current systems are preventing that from happening. Future education system will be unleashed with the advent of a standardized rapid courseware-builder and a single point global distribution system. March 2007

"Education is now the number one economic priority in today's global economy." – John Naisbitt, Author of Megatrends



Globally Challenged

Paul E. Peterson, Ludger Woessmann, Eric Hanushek, Carlos X. Lastra-Anadon, Harvard University

Executive Summary

At a time of persistent unemployment, especially among the less skilled, many wonder whether our schools are adequately preparing students for the 21st-century global economy. This is the second study of student achievement in global perspective prepared under the auspices of Harvard's Program on Education Policy and Governance (PEPG). In the 2010 PEPG report, "U.S. Math Performance in Global Perspective," the focus was on the percentage of U.S. public and private school students performing at the advanced level in mathematics. The current study continues this work by reporting the percentage of public and private school students identified as at or above the proficient level (a considerably lower standard of performance than the advanced level) in mathematics and reading for the most recent cohort for which data are available, the high-school graduating Class of 2011.

Proficiency in Mathematics

U.S. students in the Class of 2011, with a 32 percent proficiency rate in mathematics, came in 32nd among the nations that participated in PISA. Although performance levels among the countries ranked 23rd to 31st are not significantly different from that of the United States, 22 countries do significantly outperform the United States in the share of students reaching the proficient level in math. In six countries plus Shanghai and Hong Kong, a majority of students performed at the proficient level, while in the United States less than one-third did. For example, 58 percent of Korean students and 56 percent of Finnish students were proficient. Other countries in which a majority—or near majority—of students performed at or above the proficient level included Switzerland, Japan, Canada, and the Netherlands. Many other nations also had math proficiency rates well above that of the United States, including Germany (45 percent), Australia (44 percent), and France (39 percent).

Shanghai topped the list with a 75 percent math proficiency rate, well over twice the 32 percent rate

of the United States. However, Shanghai students are from a prosperous metropolitan area within China, with over three times the GDP per capita of the rest of that country, so their performance is more appropriately compared to Massachusetts and Minnesota, which are similarly favored and are the top performers among the U.S. states. When this comparison is made, Shanghai still performs at a distinctly higher level. Only a little more than half (51 percent) of Massachusetts students are proficient in math, while Minnesota, the runner-up state, has a math proficiency rate of just 43 percent.

Only four additional states—Vermont, North Dakota, New Jersey, and Kansas—have a math proficiency rate above 40 percent. Some of the country's largest and richest states score below the average for the United States as a whole, including New York (30 percent), Missouri (30 percent), Michigan (29 percent), Florida (27 percent), and California (24 percent).

Proficiency in Reading

The U.S. proficiency rate in reading, at 31 percent, compares reasonably well to those of most European countries other than Finland. It takes 17th place among the nations of the world, and only the top 10 countries on PISA outperform the United States by a statistically significant amount. In Korea, 47 percent of the students are proficient in reading. Other countries that outrank the United States include Finland (46 percent), Singapore and New Zealand (42 percent), Japan and Canada (41 percent), Australia (38 percent), and Belgium (37 percent).

Within the United States, Massachusetts is again the leader, with 43 percent of 8th-grade students performing at the NAEP proficient level in reading. Shanghai students perform at a higher level, however, with 55 percent of young people proficient in reading. Within the United States, Vermont is a close second to its neighbor to the south, with a 42 percent proficiency rate. New Jersey and South Dakota come next, with 39 and



37 percent of the students identified as proficient in reading. Students living in California (about one-eighth of the U. S. school-age population) are statistically tied with their peers in Slovakia and Spain.

What Do These Findings Mean?

The United States could enjoy a remarkable increment in its annual GDP growth per capita by enhancing the math proficiency of U.S. students. Increasing the percentage of proficient students to the levels attained in Canada and Korea would increase the annual U.S. growth rate by 0.9 percentage points and 1.3 percentage points, respectively. Since long-term average annual growth rates hover between 2 and 3 percentage points, that increment would lift growth rates by between 30 and 50 percent.

When translated into dollar terms, these magnitudes become staggering. If one calculates these percentage increases as national income projections over an 80-year period (providing for a 20-year delay before any school reform is completed and the newly proficient students begin their working careers), a back-of-the-envelope calculation suggests gains of nothing less than \$75 trillion over the period.

That averages out to around a trillion dollars a year. Even if you tweak these numbers a bit in one direction or another to account for various uncertainties, you reach the same bottom line: Those who say that student math performance does not matter are clearly wrong.

Charles Vest, former president of the Massachusetts Institute of Technology, has warned, “America faces many challenges...but the enemy I fear most is complacency. We are about to be hit by the full force of global competition. If we continue to ignore the obvious task at hand while others beat us at our own game, our children and grandchildren will pay the price. We must now establish a sense of urgency.”

An Excerpt From: Globally Challenged: Are U.S. Students Ready to Compete? By Paul E. Peterson, Ludger Woessmann, Eric Hanushek, Carlos X. Lastra-Anadon. Published by: Harvard's Program on Education Policy and Governance. PEPG Report No. : 11-02, August 2011. Available at: http://www.hks.harvard.edu/pepg/PDF/Papers/PEPG11-03_GloballyChallenged.pdf

International Math Data

	STATE	PCT ¹	OVER ²	UNDER ³
1	Massachusetts	50.7	Switzerland	Japan
2	Minnesota	43.1	Australia	Estonia
3	Vermont	41.4	Australia	Estonia
4	North Dakota	41.1	Estonia	Iceland
5	New Jersey	40.4	Iceland	France
6	Kansas	40.2	Iceland	France
7	South Dakota	39.1	Iceland	France
8	Pennsylvania	38.3	Denmark	Austria
9	New Hampshire	37.9	Denmark	Austria
10	Montana	37.6	Austria	Slovakia
11	Virginia	37.5	Austria	Slovakia
12	Colorado	37.4	Austria	Slovakia
13	Wisconsin	37.0	Austria	Slovakia
14	Maryland	36.5	Austria	Slovakia
15	Wyoming	36.0	Slovakia	Norway
16	Washington	35.9	Slovakia	Norway
17	Ohio	35.4	Sweden	Luxembourg
18	Iowa	35.2	Luxembourg	Poland
19	Indiana	35.1	Luxembourg	Poland
20	Oregon	34.8	Luxembourg	Poland
21	Connecticut	34.7	Luxembourg	Poland
22	Texas	34.7	Poland	Hungary
23	Nebraska	34.6	Poland	Hungary
24	North Carolina	34.5	Poland	Hungary
25	Maine	34.1	Hungary	Czech Republic
26	Idaho	34.1	Czech Republic	U.K.
27	Utah	32.4	Portugal	Ireland
28	Alaska	32.2	Portugal	Ireland
	US Average	32.2	Portugal	Ireland
29	South Carolina	31.9	Ireland	Italy
30	Delaware	31.3	Ireland	Italy
31	Illinois	30.8	Spain	Latvia
32	New York	30.2	Spain	Latvia
33	Missouri	29.9	Spain	Latvia
34	Michigan	28.9	Spain	Latvia
35	Rhode Island	27.7	Spain	Latvia
36	Florida	27.4	Latvia	Lithuania
37	Kentucky	27.3	Lithuania	Greece
38	Arizona	26.3	Lithuania	Greece
39	Georgia	24.7	Lithuania	Greece
40	Arkansas	24.4	Lithuania	Greece
41	California	23.9	Lithuania	Greece
42	Tennessee	23.1	Greece	Dubai
43	Nevada	23.0	Greece	Dubai
44	OKLAHOMA	21.3	Croatia	Turkey
45	Hawaii	21.2	Croatia	Turkey
46	Louisiana	19.0	Croatia	Turkey
47	West Virginia	18.5	Croatia	Turkey
48	Alabama	18.2	Turkey	Serbia
49	New Mexico	17.4	Turkey	Serbia
50	Mississippi	13.6	Bulgaria	Uruguay
51	DC	8.0	Thailand	Mexico

1 - Percentage of students "proficient" in mathematics

2 - Nearest country outperforming United States

3 - Nearest country outperformed by the United States

Source: Globally Challenged: Are U.S. Students Ready to Compete? The Latest on Each State's International Standing in Math and Reading. August 2011. Harvard University



STEM Oklahoma 2010

Roger Blais, PhD, Provost, University of Tulsa

Roger Blais is Provost and Vice President for Academic Affairs at the University of Tulsa. He is a professor of physics and engineering physics who holds a BA from the University of Minnesota and a PhD in experimental physics from the University of Oklahoma. The article was prepared specifically for this 2012 Oklahoma Academy Town Hall Research Report.

Source: National Science Board 2012, *Science and Engineering Indicators 2012*, Arlington, VA, National Science Foundation, (NSB 12-01)

* Protectorates of the United States, including American Samoa, Guam, Northern Mariana Islands, the Virgin Islands and Puerto Rico did not always have current data available, so they are not included in the report.

The following summary is drawn entirely from Science and Engineering Indicators 2012, a publication of the National Science Board, and published by the National Science Foundation. All the material is extracted from tables in Chapter 8: State Indicators.

This summary pulls from the massive amount of data on all aspects of the status of science, technology, engineering and mathematics in the United States. Some comparative data allow focus on the status of STEM development in Oklahoma.

The publication was printed at the beginning of 2012, and in most cases unless noted otherwise, it reflects the most recent data available, which was usually from 2008-09, and sometimes from 2010. The tables provide a snapshot of a single moment with no information provided on trends in these data. The text includes some information on trends.

Each of the following tables compares Oklahoma to the national maximum, mean and minimum for the parameter in question.

The Oklahoma State Rank is per the 50 states and the District of Columbia. The D.C. is excluded on several tables. While the actual maximum is DC on many tables, it is a significant outlier for the states. It has been excluded because of its peculiar work force and educational characteristics.

With a single exception, (Higher Education Funding) you will note that Oklahoma ranks in the bottom half of the states, and most often in the bottom quartile of states on each of the parameters. It is to give a clear, contemporary and quantitative vision of where Oklahoma is among the states that this report is offered to the participants in the 2012 Oklahoma Academy Town Hall.

STEM Performance ^(Table 1)

Table 1 reports the percentage of students in the grade who performed at a predefined level of proficiency in fourth and eighth grades, for both science and mathematics. There are no comparable numbers available for high school students although implications can be drawn from similar data on students passing advanced placement examinations with a score of 3 or better in STEM subjects.

Fourth Grade Math

Table 1 shows that 38% of students nationwide achieved the proficiency level. The good news is a statistically significant improvement from the 22% in 2000 and 35% in 2005. All 41 geographic areas that participated in all years of the study showed significant increases. Ethnic differences were large

Table 1
Percentage of Students
Achieving Science/Math Grade Proficiency in 2009

	4th Sci	4th Math	8th Sci	8th Math
Maximum	47%	57%	43%	52%
Average	33%	38%	29%	33%
Oklahoma	28%	33%	25%	24%
Minimum	17%	17%	15%	11%
OK Rank	36	41	32	44



and growing with the difference between white and black students increasing from 26% to 35% between 2000 and 2009, and the gap between white and Hispanic students increased from 23% to 29% during the interval. The gender gap, however, decreased from 5% to 3% during the same interval. Oklahoma showed significant gains from 16% in 2000, to 24% in 2005, to 33% in 2009.

Fourth Grade Science

Table 1 shows that 32% of students nationwide were considered proficient. Ethnic differences nationally were substantial with white students at 46%, Hispanics at 17% and African Americans at 10%. There is also a gender gap already at this age of males scoring at 34% and females at 31%.

Eighth Grade Science

For eighth grade science proficiency significant ethnic differences occur, with whites outperforming blacks by 41% to 12% and Hispanics at 8%. Males outperformed females by 6%.

Eighth Grade Math

Eighth grade mathematics performance showed gains nationally from 25% in 2000 and 28% in 2005 to 33% in 2009. The gap between white and black students increased from 28% to 31% over the period, while the gap between white and Hispanic students held constant at 25%. The gender gap was also stable from 2000 to 2009 at a 3% advantage for males. Oklahoma showed gains overall from 18% in 2000, 20% in 2005 to 24% in 2009.

Teachers' Salaries ^(Table 2)

Between 2000 and 2009 average salaries for teachers rose 33% in constant dollars, or at an annual compounded rate of 3.2%. During the same period Oklahoma teachers' salaries rose by 41%, or at an annual compounded rate of 3.9%. (Source: Estimates of School Statistics, 1969-70 through 2009-10, published by the National Education Association).

State Expenditures per Pupil ^(Table 2)

Per pupil expenditures on public common education grew 53% from 2000 to 2009, or in inflation adjusted dollars by 23%. This corresponds to an annual compounded rate of 2.3%. In Oklahoma comparable expenditures increased by 46%, or by 17.4% adjusted for inflation. This corresponds to an annual compounded rate of 1.8% during the decade, showing a consistent drop behind national norms during the period.

It is worth noting that US enrollment in common schools rose from 46.9 million to 49.0 million during the period from 2000 to 2009, or a total growth of 4.6% (an annual rate of 0.5%). Oklahoma enrollment rose from 627,000 to 645,000 or 2.9% (an annual rate of 0.3%). Overall, the nation's states spent \$519 billion on common education 2009, while Oklahoma spent \$5.082 billion.

Percent of GDP to Common Education ^(Table 3)

Nationally, spending on common education in 2009 represented 3.70% of GDP—up from 3.32% in 2000. Oklahoma spent 3.57% of GDP on common

Table 2
**Public School Teacher
Salaries and Total Expense Per Pupil**

	Salaries	Expense
Maximum	\$71,470	\$19,698
Average	\$52,418	\$10,591
Oklahoma	\$44,143	\$7,878
Minimum	\$35,136	\$6,612
OK Rank	48	49

Table 3
**Percent of Gross Domestic Product
Expended on Common Education**

	Pct GDP
Maximum	5.7%
Average	3.7%
Oklahoma	3.6%
Minimum	1.4%
OK Rank	30



schools in 2009, down from 3.71% in 2000. Oklahoma was one of only nine states for which the percentage of GDP devoted to common schools decreased during the interval.

During the period from 2000 to 2009 the Oklahoma GDP increased from \$91.292 billion to \$142.388 billion, or by 56% (annual compounded rate of 5.06%), compared to the US GDP that grew 41.8% (annual compounded rate of 3.96%). Oklahoma's total public common education expenditure during the same interval grew from \$3.383 billion to \$5.082 billion, or by 50.2% (annual compounded rate of 4.6%). Thus, commitment to public education did not keep pace with the economy.

High School and College Graduates ^(Table 4)

Table 4 refers to the percentage of the population between the ages of 25 and 44 who are graduates of high school or college. Note that while Oklahoma only lags the US average by 0.6% in percentage of young adults who are high school graduates, the state lags the national norm for baccalaureate degrees by 24%. Nationally, the percentage of young adults at early and mid-career ages with a high school diploma increased slightly from 85.0% in 2000 to 87.1% in 2009, while in Oklahoma it increased from 85.7% to 86.6%.

In 2000, Oklahoma exceeded the national norm by 0.7%, while by 2009 it fell below the national norm by 0.5%. For reference, in 2009 the population in the age window in Oklahoma contained 957,235, and of those 828,944 were high school graduates. Turning to baccalaureate degree holders in the

same age range regardless of discipline in which the degree was earned we find the following. Nationally, the percentage of this age window to hold bachelor's degrees increased from 2000 to 2009 from 26.8% to 30.9%, while in Oklahoma it increased from 21.4% to 23.4%.

Thus, nationally the percentage of graduates increased by 15.3% during the decade, while in Oklahoma it only increased by 9.3%. There is a peculiar demographic here, in that the absolute number of citizens in this age window has decreased both nationally and in Oklahoma during this decade. The national decrease in numbers from 85.1 million to 83.1 million was a total decrease of 2.35%, while the decrease in Oklahoma from 975,000 to 957,000 represents a decrease of only 1.8%.

Rate of Awarding College Degrees ^(Table 5)

Table 5 shows the rate in each state of awarding bachelor's degrees regardless of discipline in the various states. This number describes the volume of degrees awarded, but not the rate at which this group augments the population. Some states have a net growth in baccalaureate degree holders beyond those awarded in the state because of job opportunities, while other states may add fewer graduates to their workforce than they produce.

There are no data on this in the NSB report. Also note that this table refers only to traditional students who earn a baccalaureate degree within six years of high school graduation. Given these caveats, in 2009 nationally 1.6 million bachelor's

Table 4
High School and Baccalaureate Graduates
as a Percent of 25-44 Year Olds

	HS	Baccalaureate
Maximum	98.3%	58.6%
Average	87.1%	30.9%
Oklahoma	86.6%	23.4%
Minimum	80.3%	20.3%
OK Rank	40	45

Table 5
Baccalaureate Degrees Awarded
per 1,000 Population Ages 18-24

	Science/Engr	All
Maximum	98.3%	58.6%
Average	87.1%	30.9%
Oklahoma	86.6%	23.4%
Minimum	80.3%	20.3%
OK Rank	40	45



degrees were awarded, and increase of 33% from the 1.2 awarded in 2000 (annual average compounded growth of 3.25%). In Oklahoma 15,578 degrees were awarded in 2000, while 19,634 were awarded in 2009—an increase of only 26% (annual average compounded rate of 2.6%). Thus, Oklahoma is not keeping pace with the rest of the nation.

The story is more pointed if one limits the degrees to those awarded in science and engineering. Nationally, the number of degrees awarded in S&E rose from 394,000 in 2000 to 501,000 in 2009—an increase of 27% (annual average compounded rate of 2.7%). In Oklahoma, the number rose from 4,001 to 4,878—an increase of 22% over the decade (annual average compounded rate of 2.2%).

During this period the US population in the age window increased by 11.3%, while the Oklahoma population increased by 7.8%. Another sad fact is that nationally 31.3% of all baccalaureate degrees awarded are in science and engineering, while in Oklahoma only 24.8% of the students complete these majors.

Science and Engineering Degrees ^(Table 6)

If Oklahoma lags on the percentage of students who pursue baccalaureate degrees in science and engineering (*science and engineering degrees include for this study: physical, life, ocean, earth, atmospheric, computer and social sciences, mathematics, engineering and psychology*), the same is true if we look at all levels of degrees—bachelor's, master's and doctorates. The total number of degrees nationally in 2009 was 668,000, an increase of 30% from 2000 (annual average

compounded rate of 2.7%). The national percentage of degrees in S&E actually decreased by 3% over the decade. In Oklahoma the number of S&E degrees at all levels in 2009 was 6,384, an increase of 6.7%, compared to the 30% increase nationally. Oklahoma's S&E degrees as a percentage of all degrees fell by 13.8%, compared to the national drop of 3.0%.

We now shift from educational measures to looking at the actual Oklahoma workforce numbers. We will look both at the number of people employed in high tech jobs, and the smaller number employed as actual scientists and engineers.

OK High Tech Workforce ^(Table 7)

Tables 6-7 combines information on employment of workers in industries that rely on high technology regardless whether the worker is himself or herself a scientist or engineer, and information on scientists and engineers employed in those industries. Note that the time window for the available data on the first item is not the 2000-2009 window we have been using, but from 2003 to 2008. During that interval in the US, there were 13.6 million employed in high tech industries in 2003, and 13.9 million in 2008—an increase of 2.2% (an annual average compounded rate of 0.44%). In Oklahoma the high-tech workforce grew from 132,887 in 2003 to 137,334 in 2008—a growth of 3.3% (annual average compounded rate of 0.66%).

This is one area where the trend prior to the 2008 financial situation worked in Oklahoma's favor. This may reflect in part a national trend of high-tech firms to locate to more southern climates; the

Table 6
Science & Engineering Degrees, All Levels
as a Percentage of All Degrees Awarded

	Science/Eng
Maximum	39.1%
Average	28.8%
Oklahoma	24.6%
Minimum	18.6%
OK Rank	40

Table 7
Percentage of Workforce in High Tech
and of Scientists and Engineers in the Workforce

	High Tech	Science/Eng
Maximum	16.0%	6.6%
Average	11.5%	4.0%
Oklahoma	10.3%	2.7%
Minimum	5.5%	2.3%
OK Rank	31	40



Table 8
Total R&D Expenditures as Percent of GDP
(Government and Private)

	R&D/GDP
Maximum	7.7%
Average	2.6%
Oklahoma	0.7%
Minimum	0.4%
OK Rank	47

Table 9
Federal R&D Obligations Per
Employed Worker and Employed Scientist/Engineer

	Emp/Worker	Science/Engr
Maximum	\$4,591	\$101,360
Average	\$862	\$21,594
Oklahoma	\$156	\$5,337
Minimum	\$112	\$112
OK Rank	49	31

largest losses of the period were in Michigan and New York, and the greatest gains were in Texas, Virginia, Florida and Georgia.

Scientists and Engineers ^(Table 7)

About 4% of the workforce (5.5 million people) worked in S&E occupations in 2010. This represented an increase of 10% over 2003 (annual average compounded rate of 1.4% growth). In Oklahoma scientists and engineers represent 2.71% of the workforce in 2010 (44,190 workers), a tiny decline from the 2003 rate of 2.77% of the workforce. The actual number of S&E workers declined -0.38% (annual average compounded rate of -0.05%).

Research/Development Expenditures ^(Table 8)

R&D Expenditures as a percentage of Gross Domestic Product rose slightly nationally from 2.48% in 2000 to 2.61% in 2008. New Mexico leads the nation in this indicator because of large national research facilities (Los Alamos, Sandia National Labs etc) in the numerator, and a relatively small population driving the denominator. This variable correlates strongly for states with large percentages of science and engineering doctorate holders.

EPSCoR is the Experimental Program to Stimulate Competitive Research, a program of the National Science Foundation to make certain that all scientific research is not concentrated in a few states. Oklahoma is one of 27 states that are EPSCoR eligible. It is interesting to note differences between EPSCoR and non-EPSCoR states.

The 27 EPSCoR states collectively did approximately one tenth the amount of R&D as the 23 non-EPSCoR states. For comparison, the total GDP of the non-EPSCoR states was 5.8 times that of the EPSCoR states. Total R&D funding in Oklahoma in 2008 was \$1.03 billion, an increase of 56% over funding in 2000 (annual compounded growth rate of 6.5%). The Oklahoma GDP in 2008 was \$151.85 billion. This growth rate exceeded the US rate of 52% over the period (annual compounded rate of 6.2%).

Federal R&D per Employed Worker ^(Table 9)

Table 9 shows how the R&D expenditures of eleven federal research-oriented agencies expend their funding per worker in each state. This variable is highly skewed. Only ten states and the District of Columbia exceeded the national mean expenditure per worker of \$862. In 2008 total federal R&D spending was at \$125 billion, which marked an increase on an annual compounded rate in constant dollars of 8.4%.

R&D Funds per Scientist/Engineer ^(Table 9)

The total federal expenditure on R&D nationally constituted almost \$22,000 for every engineer and scientist employed. These data also reflects the highly skewed system in which ten states and the District of Columbia are the only regions that exceed the national average. The seven bottom states are all EPSCoR states.

State Tax Funds to Higher Education ^(Table 10)

We now turn our attention to the data that show state level support for higher education. Table 10 shows support normalized against the state's



Table 10
**State Funds for Higher Education/GDP and
 Per Enrolled Student (Major Public Research School)**

	HighEd/GDP	Per Student
Maximum	1.1%	\$18,901
Average	0.5%	\$9,082
Oklahoma	0.7%	\$7,893
Minimum	0.2%	\$3,803
OK Rank	13	33

gross domestic product. Nationally, this index has dropped during the period 2000 to 2010 from 0.57% to 0.52%. This is the one table showing Oklahoma in a better than average position relative to other states. But it should be noted that in 2000, Oklahoma devoted 0.81% of its GDP to higher education, so its rate is steadily falling.

Based not on GDP but actual percentage of operations supported by state funds, it is interesting to note in the 2011-12 academic year that the University of Oklahoma only drew 18% of its support from state funds, and in the 2012-13 year it will only be 16%.

Nationally, the comparable numbers are 19% of funding in 2010, down from 28% in 2002.

Funding for Research per Student (Table 10)

There are 61 institutions of higher education in Oklahoma; 29 of them are public. Only three (OU, OSU and TU) are considered national research universities. Collectively, those three conducted 98.2% of the funded research in Oklahoma higher education in 2009. Table 10 shows The following shows how much support is provided per enrolled student over the 29 public institutions.

Nationally, adjusted for inflation, funding for public higher education was flat over the first decade of the new millennium, but for major public research institutions public funding decreased by 10%. During the period 2002-08 undergraduate enrollment at major public research universities increased by nationally by 8%, while at four year public universities it increased by 22%.

In the past ten years state support for major research universities in inflation adjusted dollars dropped 20%. From 2002 to 2010, Oklahoma funding was essentially flat rising from \$80 over the decade from \$7,813 to \$7,893.

Conclusion

If Oklahoma is serious about becoming a player over the next two decades in the high tech world economy that is rapidly evolving, some serious commitment of resources is necessary to produce a skilled, creative, competent workforce, and to engage in the research and development needed to stay competitive. It is clear that relative to the rest of the nation, Oklahoma is not starting its quest for excellence in a high tech economy from a position of strength.

Measures of investment in STEM education and in research by other nations indicate that the United States as a whole is slipping in relative terms if not in absolute terms especially compared to giant emerging economies in Asia and Latin America. The data presented here show that in Oklahoma we fight a double battle because our relative position on too many measures is sinking relative to the rest of the nation, while the US itself is failing to invest at the rate of some competing economies.

There is the further danger that a state that is already relatively low in educational attainment will be less likely to embrace the importance of education and training of our workforce. Maintaining current downward trends does not encourage one to believe that Oklahoma has either the current positioning or the will to make substantial gains in the high technology economic race.

We need a concerted bipartisan effort as we did with State Question 1017 to concentrate our resources on achievable goals, and make the temporary sacrifices needed to have long-term gains. But unlike the history of that education initiative, we need to keep our focus and not be distracted by less productive opportunities that cause us to lose the gains that we make.



Survey of K-12 Education Reform

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The public policy debate on education reform (and its economic impact) at the K-12 level and the sub-optimal U.S. students' performance relative to the rest of the world has been a continuous concern since the "Coleman Report" [1]. For decades the debates have been based primarily on the statistical estimation of a mathematical relationship (known as an "input-output" relationship) using sample data with an empirical method of choice, to try to explain the existing problems. The inferences extracted from these studies may be inaccurate (potential empirical estimation biases) and thus the studies agree on some issues but generally disagree on more than they agree on and often create more confusion than consensus.

The purpose of this paper is to provide a non-technical/casual reader friendly review of some of these findings published in the area of economics of education for the U.S. and Oklahoma in particular.

The "Test Score" Debate (Output)

Test scores are often used as a proxy for an output measure. Although the controversy surrounding using test scores as a measure of output is long and strong among the researchers, a suitable alternative has not been offered. Hanushek [2] among others, acknowledges that test scores as measures of output are imperfect. However, performances on tests are used to allocate funds and evaluate educational programs. Test scores are also commonly available and appear to be valued by educators, as well as parents and decision makers, as a measure of education quality.

Factors Responsible for Performance

One of the pioneer studies is Hanushek's survey of 147 studies [2]. It concludes that in most studies expenditures, school and class size, school choice and the role of competition among schools as well as family characteristics (socioeconomics) are the primary determinants of student achievement.

Teacher quality is also one of the popular factors used in educational studies. However, Hanushek [3] argues that the standard measures of quality - experience and advanced degrees - are uncorrelated with student performance, which makes the findings of some of the earlier studies with respect to the quality variable, at least the Oklahoma schools studies such as Adkins, Moomaw [4], questionable. A brief discussion of some of these factors is presented below.

Do Expenditures Matter?

Several studies have consistently found that educational expenditures, including teacher salary, and student performance lack a strong or systematic relationship (for an extensive list of references see [5]). Hanushek [6] discussed "the strange evolution of school finance in the last four decades". He notes in particular that the courts have played an important role in recent years in mandating expenditure increases for public school systems. He goes on to explain the reasons behind these mandates and the lack of effect these expenditures have had in affecting student achievement.

This confirms his earlier statements [2], [7] in that "there is no strong or systematic relationship between school expenditures and student performance". Oklahoma school studies have been consistent with these findings e.g., Abdul Rahman [8], Adkins-Moomaw [4], Rassouli-Currier [5].

Does School and Class Size Matter?

The possible effect of school size on student performance cited by researchers captures the effect of economies of scale on schools' productivity. The results from studies of the effects of the scale economies associated with public schools are inconsistent. Although consolidation policies are widely promoted and practiced, these inconsistencies must affect confidence in such policies.



As for the effect of class size on performance, Hoxby [9] finds no evidence that class size reductions improve performance. In

addition, she finds that reductions in class size are correlated with other factors such as a higher income and academically oriented parents, who are more likely to push for smaller class sizes (this is an issue of “estimation bias” due to the endogeneity problem and is not in general addressed by most studies).

In the case of Oklahoma schools, according to Abdul Rahman’s [8] study, the progress reports on educational performance in Oklahoma since HB 1017 suggests that schools’ performance has improved.

However, the degree of improvement is not impressive, suggesting the existence of considerable inefficiencies in the school system. She finds evidence that economies of scale exist and the effect is stronger for upper grades. Adkins and Moomaw [4] and Rassouli-Currier [5] also believe that the “district size effect” exists and suggest that the optimum number of students is around 20,000.

School Choice and the Competition Argument

Deller and Rudnicki [10] suggested that competitive pressure within highly concentrated counties results in better school performance and is responsible for the school choice argument, i.e., allowing parents to choose which public school their children attend.

Hoxby [11] studied the effect of school choice - private and public - on public school performance. She concludes that increased competition between the two increased public schools’ productivity without any increase in spending.

Socioeconomic Factors

The environmental variables over which school districts have no control, e.g., percentage of minority students, percentage of students eligible for reduced or free lunch, the poverty rate in

“Money and class size don’t matter much; families and culture matter a lot”
Susanne Rassouli-Currier, PhD

the districts, and percentage of students who have an adult age 20+ with higher than a high school diploma in their household

etc. have been consistently mentioned in the literature as the most important variables affecting students’ performance. Hence, the differences in socioeconomic status of students could possibly explain the school district differences.

Conclusions: The literature in the area of economic education reform in U.S. includes almost five decades of dedicated research. The results of these studies convey some consensus regarding factors affecting schools’ poor performance.

Money/Class Size Don’t Matter Much: Factors such as misallocation of resources within the schools, or the adoption of inferior pedagogy (e.g., Baumol and Becker [12]) as well as teacher salary and class size etc. do not seem to hold much explanatory power over student achievement.

Families and Culture Matter A Lot : However, most studies strongly suggest that inefficiencies exist in U.S. school systems in general (as well as Oklahoma) and could be due to exogenous factors such as the breakdown of the family, poverty, increased immigration etc. Therefore, it may be appropriate to conclude that the key factors affecting efficiency among Oklahoma school districts are primarily students’ characteristics and family environment. These factors are consistently identified as strongly affecting educational attainment, regardless of how it is measured.

Traditional Improvement Strategies May Fail

Hence, an increase in spending on education may do very little to improve efficiency. This is not to disregard all other factors within school districts control and to suggest students’ failure is entirely due to their socioeconomic status. It is only to recognize that policies regarding changes in other factors have to be recommended in the context of the existing socioeconomic factors in order for those policies to bear validity.



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The Student First Agenda

Michelle Rhee, Students First, Sacramento, CA

About Students First

Led by Michelle Rhee, the former Chancellor of D.C. Public Schools, StudentsFirst formed in 2010 in response to an increasing demand for a better education system in America. Our grassroots movement is designed to mobilize parents, teachers, students, administrators, and citizens throughout country, and to channel their energy to produce meaningful results on both the local and national level. StudentsFirst is a 501(c)4 organization based in Sacramento, CA.

Policy Priority 1:

Elevate the Teaching Profession

StudentsFirst believes that all students can achieve at high levels when they have effective teachers. We will work to ensure every child is guaranteed that right. Because excellent teachers are the backbone of public education, they must be recognized as professionals with whom we entrust the awesome responsibility of developing our nation's future.

StudentsFirst will work with states and districts to institute policies and practices that achieve these goals and treat teachers like true professionals. We will focus on the following policy objectives:

- Evaluate teachers based on evidence of student results.
- Evaluate principals based on student results, and on their ability to attract, retain, manage, and develop excellent teachers.
- Support the expansion of effective teacher training and certification programs and the elimination of ineffective programs.
- Pay teachers based on their impact on student results.

- Make all staffing decisions — including hiring, transfers, and firing — based on teacher impact on student results.
- Eliminate tenure as a protection for poor-performing teachers and principals.

Treating teachers as professionals means building an education system in which:

- Teachers will receive excellent training, professional development support, supervision, and leadership.
- Effective teaching will be encouraged and rewarded through an evaluation and compensation system based on teachers' impact on their students.
- The views and professional judgment of teachers will play a critical role in building effective schools. These views and judgments will not be limited to any one group or unit.

Unfortunately, existing practice does not reflect this framework and in turn fails to recognize differences and excellence among teachers. The status quo devalues effective educators by treating all teachers as if they are interchangeable. Consequently, our nation's current education policies make almost no effort to measure the effectiveness of teachers — much less to connect effectiveness to teacher placement, training, or pay.

The current quality-blind approach harms students, families and teachers. When school systems cannot make crucial staffing decisions based on effectiveness, they default to making decisions the easiest way possible: hiring from the same sources, increasing pay in rigid lock step, and imposing seniority as the most important teacher attribute, regardless of quality. Less tenured teachers — even highly effective ones — are “bumped” from their classrooms to the detriment of their students.





Our goal is to shift this dynamic through pursuit of policies that prioritize students. Teaching must be the profession of choice for the most talented individuals seeking recognition, growth and fulfillment. In a new public education environment in America, appropriate compensation will reflect the value and rigor of teachers' work.

More importantly, great teachers will be surrounded by highly effective colleagues and supported in a school environment that allows them to focus on teaching and providing excellent instruction for their students.

Professional development will be meaningful and evaluations will offer real feedback for teachers to improve their craft. This environment will make teaching the attractive professional career it should be, which in turn will positively and dramatically change the learning environment for students.

Policy Priority 2: Empowering Parents with Real Choices and Real Information

StudentsFirst believes that students and their parents need choice in order for America to have an excellent education system. Traditionally, we have taken a "one size fits all" approach to education that does not serve the learning needs of all of our children. Parents naturally put the interests of their children above the interests of the system.

Therefore the more power parents can exercise over their children's education, and the greater the number of high-quality options from which to choose, the more we will build a students-first system. It will take time, perhaps years, to shift to a full-functioning choice system, but with proper accountability and government oversight, parents should be able to decide which delivery method and which provider is best for each child.

StudentsFirst will work with states and districts to institute policies and practices that further this vision and empower parents.

We will focus on the following policy objectives:

- Build a robust choice system that allows parents to choose from among multiple high-quality schools.
- Ensure that parents have access to meaningful data about schools and teachers.
- Empower parents to avoid low-performing teachers and schools.

Today, wealthy families have economic school choice; they can choose neighborhoods with good schools, supplement schools with extra instruction and activities, and even choose to send their children to private schools.

Students enjoying these options tend to perform quite well nationally and internationally. In

contrast, low-income families historically have had limited school options and their children have been forced to attend low-performing schools.

While low-income families have been held captive in failing schools, adults in those schools could count on keeping their jobs while placing their own interests above those of students, often claiming that it's simply not possible to raise the performance of low-income children to national standards. A true students-first system would give parents power to choose among several quality school options.

To fully empower parents, families must not only be provided choices, but also useful, meaningful information about those choices. Just as parents get report cards about their children's performance, parents and the public should also get "report cards" about the comparative performance of local schools and teachers.

If schools are transparent about school and teacher effectiveness, then they will have more incentives to keep improving constantly, and parents will be able both to demand better for their children and to determine which school is best for each child.

Policy Priority 3:

Spend Taxpayer Resources

Wisely To Get Better Results for Students

StudentsFirst believes that district governance and funding decisions must be made through the prism of student learning and family empowerment rather than adult political and parochial interests. For too long schools have suffered as the result of misdirected accountability. All spending should tie to student achievement and the structures in place should be directly accountable for the results.

StudentsFirst will support laws and policies that support smarter resource allocation and governance designed to consistently prioritize students and student learning above all other choices.

We will focus on the following policy objectives:

- Ensure that strong accountability systems are in place.
- Support transparent budgeting at all levels and ensure that public resource expenditures maximize student benefit.
- Ensure that the government exercises discipline in pension and benefit programs.

While per-pupil funding for public education in the United States has more than doubled over the past 40 years (accounting for inflation), the most recent international data shows that U.S. students are lagging far behind students in other industrialized nations. U.S. students scored "below average" in math on the PISA examination, placing the U.S. 25th out of the 34 OECD participant nations.

Despite this significant increase in spending, student achievement in the U.S. has remained relatively flat.

In today's challenging fiscal climate, states must consider the possibility that school districts long accustomed to budget growth must now learn to reallocate the resources they already have — in particular toward uses that effectively promote student learning and raise the standards of the teaching profession. But first, we need to examine the governmental structure in place to make these important decisions.

Outdated governance structures have long been exploited to serve the interests of adults above those of children. Far from providing expert guidance, local school boards are often obstacles to real reform and properly aligned spending priorities.

Communities with failing schools deserve governance structures and budgeting policies that put students first.



Higher Education's Online Revolution

John Chubb and Terry Moe, Hoover Institution, Stanford University

Mr. Chubb is interim CEO of Education Sector, an independent think tank, and a distinguished visiting fellow at Stanford University's Hoover Institution. Mr. Moe is professor of political science at Stanford and a senior fellow at Hoover. They are the authors of "Liberating Learning: Technology, Politics, and the Future of American Education" (John Wiley & Sons 2009). A version of this article appeared May 31, 2012, on page A17 in the U.S. edition of The Wall Street Journal, with the headline: Higher Education's Online Revolution.

The substitution of technology (which is cheap) for labor (which is expensive) can vastly increase access to an elite-caliber education.

At the recent news conference announcing edX, a \$60 million Harvard-MIT partnership in online education, university leaders spoke of reaching millions of new students in India, China and around the globe. They talked of the "revolutionary" potential of online learning, hailing it as the "single biggest change in education since the printing press."

Heady talk indeed, but they are right. The nation, and the world, are in the early stages of a historic transformation in how students learn, teachers teach, and schools and school systems are organized.

These same university leaders mentioned the limits of edX itself. Its online courses would not lead to Harvard or MIT degrees, they noted, and were no substitute for the centuries-old residential education of their hallowed institutions.

They also acknowledged that the initiative, which offers free online courses prepared by some of the nation's top professors, is paid for by university funds—and that there is no revenue stream and no business plan to sustain it.

In short, while they want to be part of the change they know is coming, they are uncertain about how to proceed. And in this Harvard and MIT are not alone. Stanford, for instance, offers a free online course on artificial intelligence that enrolls more than 150,000 students world-wide—but the university's path forward is similarly unclear. How can free online course content be paid for and sustained?

How can elite institutions maintain their selectivity, and be rewarded for it, when anyone can take their courses?

This challenge can be met. Over the long term, online technology promises historic improvements in the quality of and access to higher education. The fact is, students do not need to be on campus at Harvard or MIT to experience some of the key benefits of an elite education. Moreover, colleges and universities, whatever their status, do not need to put a professor in every classroom.

One Nobel laureate can literally teach a million students, and for a very reasonable tuition price. Online education will lead to the substitution of technology (which is cheap) for labor (which is expensive)—as has happened in every other industry—making schools much more productive.

And lectures just scratch the surface of what is possible. Online technology lets course content be presented in many engaging formats, including simulations, video and games. It lets students move through material at their own pace, day or night. It permits continuing assessment, individual tutoring online, customized reteaching of unlearned material, and the systematic collection of data on each student's progress.

In many ways, technology extends an elite-caliber education to the masses who would not otherwise have access to anything close.



Changing the Economics of Education

John Hennessy, PhD, President, Stanford University and Salman Khan, Mountain View, CA

John Hennessy and Salman Khan on how technology makes the college numbers add up (Interview with Walt Mossberg, Wall Street Journal, 6/4/12)



MR. MOSSBERG: *You have a lot of money at Stanford. I've been, until recently, a trustee of Brandeis University. It's a very good university. It charges about what you do. But it doesn't have your money, and there are a lot of colleges like that.*

We all probably have an opinion on the state of education, but a few in the trenches are coping with its problems and actually trying to fix them. Stanford University President John Hennessy and Salman Khan are two of those people.

Is there anything to be done about the rising price of higher education? That was the question posed to John Hennessy, president of Stanford University, and Salman Khan, founder of Khan Academy, a nonprofit online-learning organization. They sat down with The Wall Street Journal's Walt Mossberg to discuss how technology might be part of the solution. Here are edited excerpts of their conversation.

COST CURVE

MR. MOSSBERG: *Is it either moral or sustainable for elite colleges and universities to be charging what is approaching \$60,000 a year to go to college?*

DR. HENNESSY: I think the real question is whether or not what we're charging is a worthwhile investment for the American public and for families. That's the key question. The elites have the advantage in that they have been able to significantly subsidize what they charge with financial aid.

It's a really interesting business we're in. First we charge less than it costs us to provide an education, because we subsidize everybody to some extent. And then if you can't afford it, we give you a discount.

DR. HENNESSY: Agreed, and if you look at the vast majority of colleges in the U.S., there are way too many that are [dependent on tuition to fund their budgets]. That is not sustainable. We have to do something to bend the cost curve, and this is where technology comes in.

MR. KHAN: On the sustainability question, I agree. I think the elites will probably do just fine, but for the bulk of universities, nothing can grow 5% faster than inflation forever. It will just take over the world, and that's what's happening now. There is a fundamental disconnect happening between the providers of education and the consumers of education. If you ask universities what they are charging the \$60,000 for, they'll say, "Look at our research facilities. Look at our faculty. Look at the labs and everything else." And then if you ask the parents and the students why they are taking on \$60,000 of debt, they'll say, "Well, I need the credential. I need a job."

So one party thinks they're selling a very kind of an enriching experience, and the other one thinks that they're buying a credential. And if you ask the universities what percentages of your costs are "credentialing," they say oh, maybe 5% to 10%. And so I think there's an opportunity if we could decouple those things—if the credentialing part could happen for significantly less.

MR. MOSSBERG: *What do you mean by the credentialing part?*



MR. KHAN: If you think about what education is, it's a combination. There's a learning part. You learn accounting, you learn to write better, to think, whatever. Then there is a credentialing part, where I'm going to hand you something that you can go take into the market and signal to people that you know what you're doing.

Right now they're very muddled, but this whole online debate or what's happening now is actually starting to clarify things. At Khan Academy we're 100% focused on the learning side of things. And I think it would be interesting [if credentials could be earned based on what you know and not on where you acquired that knowledge].

MR. MOSSBERG: The highest rates of tuition increase have been at public institutions. Out-of-state students going to these public universities are paying \$25,000 to \$30,000 now?

DR. HENNESSY: The biggest tragedy is if you pay that and don't get your degree. We need to deal with this problem. Costs are going up because educational institutions are driven by wages.

FLIPPED CLASSROOMS

MR. MOSSBERG: So talk about what you've been doing. What service are you offering and what's it like?

MR. KHAN: Our mission statement is a free world-class education for anyone anywhere. We're most known for videos, but it isn't just videos. It's also interactive software, plus data feedback. Our goal is to really use data, to keep pushing the envelope of what is possible virtually.

MR. MOSSBERG: A lot of people think of virtual education as a professor standing in front of a camera and just talking. What more do you do beyond that? Do you offer some interactivity where you have to show that you're participating?

MR. KHAN: Most of our resources are going on the interactive side. So there's these kind of problem generators that will generate as many

multiplying polynomial questions as you need until you show proficiency. It's tracking everything, it's logging everything. We can start to say proficiency isn't an A, B or C. It's, what is the probability of you being able to do this type of problem at some future date?

MR. MOSSBERG: How about Stanford?

DR. HENNESSY: We started with the view that the large lecture no longer works for this generation of students. So the whole flip classroom idea is something that's appealing. That simply means you do the lecture online and use the classroom to do something that's more interactive and more engaging.

We put some of this stuff online and then all of a sudden we got 100,000 students around the world signed up. We've learned a bunch of things. One of the phenomenal things we saw in our experiment was how quickly the community would answer questions when students in the class posed them.

What I told my colleagues is there's a tsunami coming. I can't tell you exactly how it's going to break, but my goal is to try to surf it, not to just stand there.

MR. MOSSBERG: Are the students doing this actually going to get bachelor's degrees or master's degrees from Stanford?

DR. HENNESSY: I think you'll see a mix of things. You may see some hybrid models where students do half their course work remotely online and then are physically on a campus for a while. You may see models where a certification in a particular area, say Internet programming, is given rather than an entire degree.

One area I'm very excited about is providing opportunities for very talented high-school students to go begin work on their college curriculum. Say somebody comes and takes this course and then comes to the university. Maybe we just give them an exam and say if you pass this exam at this level you get credit for the course.



Better Schools, Fewer Dollars

Marcus Winters, *The City Journal of the Manhattan (NY) Institute*

Mr. Winters is a senior fellow at the Manhattan Institute, an assistant professor in the College of Education at the University of Colorado, Colorado Springs, and the author of Teachers Matter: Rethinking How Public Schools Identify, Reward, and Retain Great Educators. (Wall Street Journal, June 21, 2012).

Here's what looks like a policy dilemma.

To attain the economic growth that it desperately needs, the United States must improve its schools and train a workforce capable of competing in the global economy. Economists Eric Hanushek, Dean Jamison, Eliot Jamison, and Ludger Woessmann estimate that improving student achievement by half of one standard deviation—roughly the current difference between the United States and Finland—would increase U.S. GDP growth by about a full percentage point annually. Yet states and the federal government face severe budgetary constraints these days; how are policymakers supposed to improve student achievement while reducing school funding?

In reality, that task is far from impossible. The story of American education over the last three decades is one not of insufficient funds but of inefficient schools. Billions of new dollars have gone into the system, to little effect. Luckily, Americans are starting to recognize that we can improve schooling without paying an additional dime. In fact, by unleashing the power of educational choice, we might even save money while getting better results and helping the economy's long-term prospects.

Over the last four decades, public education spending has increased rapidly in the United States. According to the Department of Education, public schools spent, on average, \$12,922 per pupil in

2008, the most recent year for which data are available. Adjusting for inflation, that's more than double the \$6,402 per student that public schools spent in 1975.

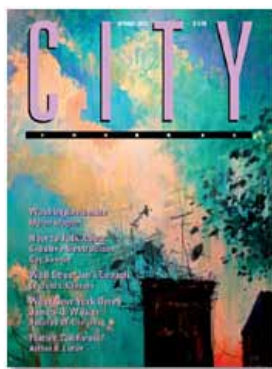
Despite that doubling of funds, just about every measure of educational outcomes has remained stagnant since 1975, though some have finally begun to inch upward over the last few years. Student scores on the National Assessment of Educational Progress (NAEP)—the only consistently observed measure of student math and reading achievement over the period—have remained relatively flat since the mid-1970s. High school graduation rates haven't budged much over the last 40 years, either.

For further evidence that hiking spending produces few educational outcomes, look at how private schools compare with public ones. That \$12,922, remember, is a national average; spending in urban public school systems is often far higher.

The Cato Institute's Adam Schaeffer recently calculated total expenditures per pupil for public school systems in America's five largest metropolitan areas and Washington, D.C.

Washington spent the most—an average of \$28,000 per public school student, which was more than the maximum tuition charged to attend such prestigious private schools as Lowell School (\$25,120), Sheridan School (\$24,700), and Georgetown Visitation School (\$20,600), and only slightly below the maximum tuition charged at St. Albans (\$31,428), National Cathedral School (\$30,700), and Georgetown Day (\$29,607).

Does the handsome funding of urban public schools produce results? Not according to the NAEP, which shows, for instance, that more than 25 percent of public school eighth-graders are



reading below the “basic” level, compared with only 8 percent of private school students.

Obviously, it’s misleading simply to compare the performance of private and public school students without adjusting for the type of student enrolled in each sector. A student whose parents can afford to pay private school tuition is likely to score higher on standardized tests than the average public school student, regardless of the quality of the school.

But there’s another way to prove that public schools don’t get as much for their dollars as private schools do: research on school voucher programs, which pay tuition for students (usually low-income) to attend private schools. The best studies use a random design similar to what’s used in medical trials and broadly accepted as a “gold standard” methodology.

They take advantage of the fact that when more students apply for a program than there are vouchers available, the program awards vouchers randomly, ensuring that the only difference between the subsequent performance of those who received vouchers and those who didn’t is whether they wound up going to the private school or a public school. A researcher can thus compare the achievement of these two sets of students and determine which setting, public or private, does a better job.

The nearly uniform finding from this research is that students benefit academically when they attend private school, rather than the public school that they would otherwise have attended. Some disagreement persists about how large the private schools’ impact is and about whether it affects all students or only those from particular backgrounds—but not even the harshest critics claim that attending a private school harms students. Of particular interest to budget-strapped state and local governments is that the cost of the vouchers in these studies—and even the total tuition charged by the private schools, if it’s greater than the cost of the voucher—is well below what the public schools would spend to educate the same child.

For instance, economist Robert Costrell found that by paying tuition to send 18,500 public school kids to private schools, Milwaukee saved taxpayers \$31.9 million in 2008.

The data on charter schools are more mixed, but the general lesson is similar. Charter schools are publicly funded schools that operate essentially as their own school districts, free of the rules that bind regular public schools. Like voucher programs, charter schools usually admit students by lottery when there are more applicants than available seats. Here again, studies using the random-assignment approach have found that charter schools in New York City, Boston, and Chicago produce better educational outcomes than the local public schools that students would have attended. Further, state funding for charter schools is, at most, equal to—and usually less than—the funding for traditional public schools.

The bottom line: a substantial body of research shows that at worst, students perform as well in private and charter schools as they would have in regular public schools, and at a lower cost.

Public schools are inefficient for many of the same reasons that the Department of Motor Vehicles and other government bureaucracies are. In her book *Educational Economics*, University of Washington researcher Marguerite Roza shows that public school inefficiencies are largely the product of burdensome regulations imposed by a top-down organizational model. School districts collect money and allocate it from a central base according to a variety of bureaucratic rules, only some of which make sense. Schools themselves have little discretion over how to use their resources.

Consider the way public schools spend money on their most important asset: teachers. According to the Department of Education, teacher salaries and benefits account for about 54 percent of public school budgets, which surely suggests that they should be structured in a way that maximizes those dollars. Instead, teacher salaries depend entirely on two criteria that, the evidence shows, bear little or no connection to a teacher’s effectiveness: years of



experience and number of advanced degrees. As a result, schools must pay higher salaries to teachers who may not be more effective than teachers lacking advanced degrees or with fewer years on the job. A more efficient system, of course, would direct capital to the teachers whom the school most wants in the classroom, regardless of what their résumés look like.

In most districts, public schools aren't even allowed to decide which teachers to employ, since tenure ensures that principals can't remove the least effective teachers. Most collective bargaining agreements also allow more senior teachers to push their way into job openings, regardless of whether the principal thinks they're right for the job. Nor can schools make their own decisions about whom to keep when they're laying teachers off: either by state law or by collective bargaining agreement, most school systems require that layoffs be carried out strictly according to seniority, without any consideration of teachers' value.

Thus, when budget cuts arrive, schools not only face staff reductions; they often lose their best young teachers. And since pay is based on seniority, the schools are simultaneously dismissing their least expensive teachers.

Policies designed to solve these problems often lead to more inefficiencies. New York City eliminated seniority-based transfers in an attempt to give principals more control over who taught in their schools. The new policy created a group of teachers who, having lost their jobs in one school, could no longer use their seniority to push their way into another school. In a normal system, that wouldn't be a problem: those teachers could simply be fired. But the collective bargaining agreement prevented the school district from doing so. Instead, the teachers entered what the city calls its Absent Teacher Reserve (ATR), members of which

are paid full salaries and benefits while continuing to move up the pay scale. The nonprofit New Teacher Project calculates that the ATR costs city taxpayers about \$74 million annually.

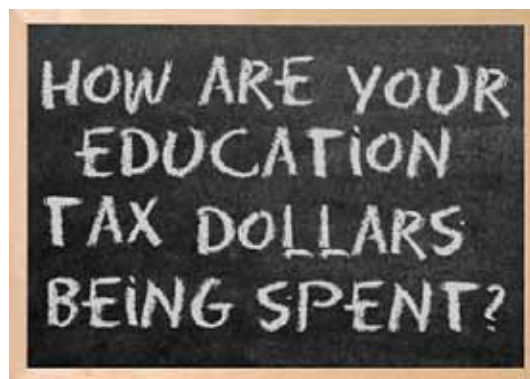
Notwithstanding public schools' high spending and poor results, state lawmakers and courts keep pushing for even more spending. Over the last decade, high courts in several states have ruled that public school spending in certain urban systems violates state constitutional requirements to spend enough on public schools to produce "adequate" results. These rulings have been influenced by so-called adequacy studies, which use statistical models to estimate the minimum expenditure that a school district with certain characteristics—for instance, a particular percentage of students who are low-income—must incur to produce a desired academic result.

As Costrell, Eric Hanushek, and Susanna Loeb have shown, however, these studies suffer from a variety of conceptual and methodological problems. The chart below, which is reproduced from an article by the three economists

in the *Peabody Journal of Education*, illustrates a simplified version of the adequacy approach.

Each dot on the chart represents a Missouri school district, with district spending per pupil plotted on the vertical axis and test-score performance on Missouri's state exam, the Missouri Assessment Program, on the horizontal. The line running through the middle of the chart shows the average amount that a district spends to achieve a particular outcome. For example, districts with 40 percent of their students scoring in the top two categories on the test spend an average of \$7,000 per student.

Advocates of the adequacy approach point to the line as their estimate of how much a district needs to spend to achieve a particular outcome; they would say, for instance, that if a district wants



40 percent of its students to score in the top two test categories, the district should spend \$7,000 per student. But that approach is wrongheaded on many levels.

First, the line shows us the average amount spent to achieve a particular result, which is not the same as showing the minimum amount necessary to achieve that result—the only meaningful definition of “adequacy” in this context. Notice the dot just to the right of the 40 percent marker but also well below the line. That dot represents an actual district spending just over \$5,000 per student to achieve the 40 percent mark.

That district must have adequate resources to produce the desired outcome; after all, it is actually producing that outcome with those resources! The chart shows, in other words, that the adequate funding necessary to achieve the desired outcome is \$5,000 per pupil, not \$7,000.

For that matter, what about the districts above the expenditure line? According to the models, those districts are spending more than they should to produce their results; that is, they are inefficient. Strangely, the authors of the adequacy studies don’t argue that money should be taken away from those districts.

Also, it’s obvious from the chart that there is great disparity in the achievement of various districts spending the same amount. Just look at how widely the dots are dispersed, and you’ll realize that the relationship between spending and achievement is far from straightforward. So the line necessarily includes an enormous measurement error. Using the line to determine how many dollars a district must spend to get certain test-score results is irresponsible, to say the least.

A final flaw of the adequacy approach is that it evaluates school spending under the current system, when it is precisely that system’s structure that leads to widespread inefficiency. Perhaps public schools don’t have adequate resources to

succeed under the terrible rules governing their allocation of dollars. The answer to that problem isn’t to give even more money to them; it’s to change the system and find ways to allocate dollars more productively.

Schools don’t need more funds; they need the freedom to use their funds as they see best. That can happen only if the restrictions of the current system no longer bind them. A better system—one that the United States should begin moving toward—would be a taxpayer-funded one of relatively autonomous schools.

Every school would become, in effect, a charter school. Districts would still have a role in this kind of system, imposing performance standards that schools would have to meet to keep their doors open. But it would be each school’s responsibility to adopt sound policies and use its resources wisely.

Such a system of autonomous schools isn’t as far-fetched as it once seemed. In some places, the charter sector is beginning to rival the traditional public school system. For instance, about a third of all public school students in Washington, D.C., attend charter schools. Though just 3 percent of New York City’s public school kids are in charters, certain neighborhoods post better numbers—Harlem, in particular, where the fraction is about 15 percent.

School voucher programs have also surged, though far less rapidly. As I wrote recently in these pages, 2011 was the “Year of the Voucher,” with legislatures in 12 states either adopting new school voucher policies or meaningfully expanding existing ones.

As more students use public dollars to attend schools outside the traditional public school sector, student achievement will probably improve, and expenditures will certainly decline. That’s an outcome that should interest lawmakers in these fiscally troubled times.



The Workforce/Talent Imperative

Terry Watson, Director Workforce Solutions Division, Oklahoma Department of Commerce



While every individual may have their own definition of their personal prosperity, a key definition for this discussion is “the condition of enjoying wealth, success, or good fortune”. One would assume that

to enjoy wealth, success or good fortune, that a majority of Oklahoman’s will need to have higher incomes, and to have higher incomes will require them to have skills, credential and degrees that Oklahoma employers value.

For Oklahoma employers to prosper, they need to have employees that can help them meet the bottom line, help them produce their product or service efficiently and get it to market timely. This requires a workforce that has the right skills, in the right place at the right time to meet these employer goals.

So, how does Oklahoma get to the place where we have the right people with the right skills at the right time, both now and in the future? Which comes first, better and higher paying jobs, or citizens with higher skill levels and post secondary credentials and degrees that are valued by employers?

The Key to unleashing prosperity in 2032 is to have in place an “enterprise system” of human capital development. So, what is an enterprise system, and how would it work? And why isn’t it working well now?

An enterprise system is simply a statewide systemic process for connecting the various workforce, education and training partners in order to provide holistic services to job seekers and employers. The goal is to create a pipeline of appropriately credentialed Oklahomans in order

to support economic development efforts. No one entity can do it all, but with connected data bases, common data on skills and credentials in demand, common goals for workforce/ talent development, common tools that are used consistently by all of the workforce partners, joint statewide planning efforts and other related initiatives, these separate entities can become part of a comprehensive system that will provide the needed pipeline of appropriately skilled and credentialed Oklahoman’s.

We have all seen various statistics and news stories about employers who cannot find the right people. Even in the time of high unemployment, employers still cannot find enough of the right skills and credentials in the available workforce. Supply is simply not meeting demand. Why? There are several key reasons including:

- 1 *Antiquated workforce and education programs that were designed for another time and another place and not for the current knowledge based economy.*
- 2 *Programs have been developed to serve specific parts of the population, and they often exist in silos and not part of a comprehensive enterprise system.*
- 3 *Employers are often not engaged with education and training programs and those programs do not really understand the needs employers have.*
- 4 *We do not have adequate career planning tools embedded into our education and training systems and processes and as a result, individuals do not have the information they need to make wise career choices.*
- 5 *Social issues are often preventing human capital development in a large percentage of Oklahoma citizens.*





At its heart, an enterprise system will ensure that individual Oklahomans have the kind of jobs that best utilize their skills and provide prosperity for their families. Such a system will also adapt rapidly to technology changes, as well as anticipate future workforce needs so that the education and training pipeline will continually adjust to market needs in order to create a pipeline of appropriately skilled and credentialed Oklahomans.

So, the first step in creating this workforce system is to link strategic action items across all workforce, training and education entities and programs.

In 2011, The Governor's Council for Workforce and Economic Development (GCWED) did a study that consisted of focus groups and surveys of employers. The major findings related to employers desire to access available talent and available workforce support services from 1 (one) place. There needed to be an overall coordination of services for both employers and job seekers. In other words, a "systems" approach.

In responding to these issues, the GCWED strategic plan of work was designed to begin such an enterprise workforce system by linking partner agencies and programs both thru an electronic process and thru joint planning, policies and tools. Specific elements include:

1. Develop common outcomes: Joint planning/ development of a business plan that includes outcomes and metrics that all education and training partners will work together to achieve. This will support Oklahoma's business retention, expansion and attraction efforts: Examples:

- a. What is Work Ready? Common definition and metric
- b. More direct & systemic involvement by employers in P-20- Adult/ education and training programs and in establishing desired outcomes for the enterprise system.
- c. Key Outcome: To increase the number of employer validated credentials and degrees obtained

2. Implement/ expand on-line/ virtual systems and processes: in order to provide efficient and effective service delivery, and to link and leverage various programs, we MUST have common virtual tools and a linked longitudinal data system. This includes a portal that will provide a single access to talent and services available to employers and a "data base" or some process that will more readily provide information, including real time information, on talent supply and demand.

3. Develop and implement career pathways: Career Pathways is an organizing process that can link employer validated credential & degree needs to the education and training supply chain. This would involve public/ private regional partnerships between employers and service providers. This will ensure that the workforce pipeline will support business retention and attraction.

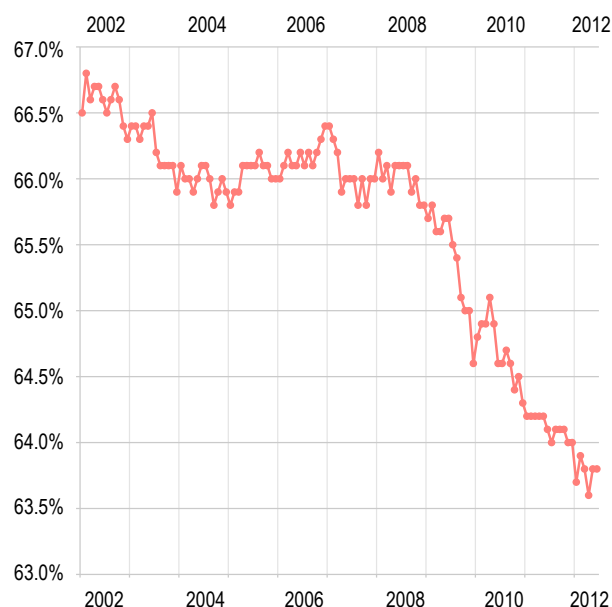
4. Re-invent workforce investment boards and one-stop career centers: Defining their role, enhancing their efforts to engage employers by sector within regions. Involving all system partners and creating WIN-WIN & value added regional planning and service delivery system. Workforce boards include a majority of employer members.

If properly constituted and functioning, these employers can provide a great foundation for regional partnerships.

Certified one-stops will ensure that a standard of service exist and partners are connected within a region in order to provide coordinated service delivery.

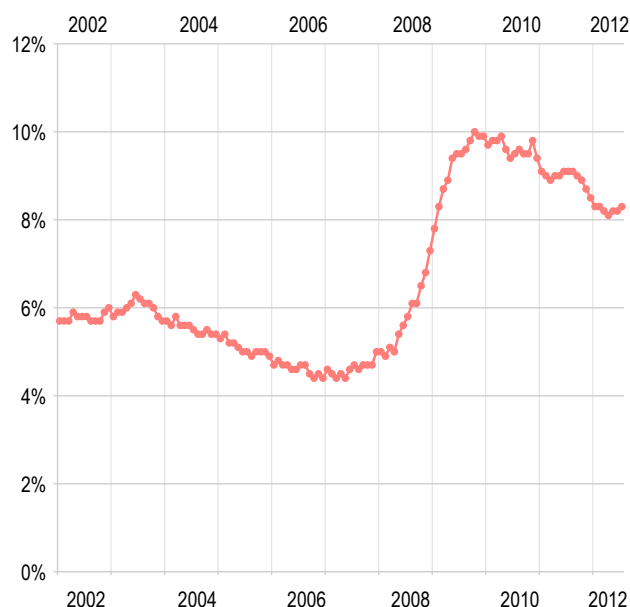


LABOR FORCE PARTICIPATION RATE
United States January 2002 - June 2012
 Source: Bureau of the Labor Statistics
 For ages 16 and above.



The labor force participation rate is the percentage of working-age persons who are employed or are unemployed but looking for a job. Typically "working-age persons" is defined as people between the ages of 16-64. People in those age groups who are not counted as participating in the labor force are typically students, homemakers, and persons under the age of 64 who are retired. In the United States the labor force participation rate is usually around 67-68%.

UNEMPLOYMENT RATE
United States January 2002 - July 2012
 Source: Bureau of the Labor Statistics
 For ages 16 and above.



The percentage of the total labor force that is unemployed but actively seeking employment and willing to work. From 1948 to 2004, the monthly U.S. unemployment rate has ranged between about 2.5% to 10.8%, averaging approximately 5.6%. The unemployment rate is considered a lagging indicator, confirming but not foreshadowing long-term market trends.

Finally, the results of building such a system will help both the public and private sectors to think differently about talent development. Business understands supply chains, they deal with them every day in their normal business activities.

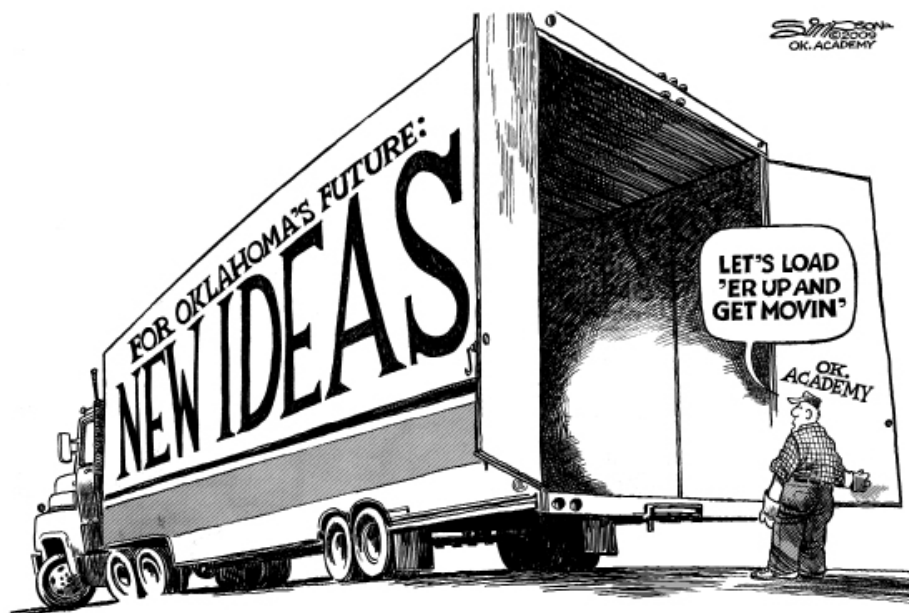
So, if we begin thinking in terms of "Talent Supply Chain Management" the roles of employer and education and training provider, and job seeker might become clear. Instead of education and training providers "pushing" potential workers through the system, employers will "pull" them through based on the competencies they require. The results could be transformational. Job Seekers will

have the information and guidance tools to make wise career choices and better manage their own careers.

Education and training providers will better understand employer needs and build curriculum accordingly. Employers will have top talent, individuals will have clear guidance for their education and career plans, schools and training providers will become highly effective in serving each individual's educational needs.

Everyone will know precisely what they need to do to get a good job, and will have the support to do it.





Moving Ideas Into Action

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